

# EXHIBIT C

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLORADO

IN RE: PACIFIC FERTILITY Case No. 3:18-cv-01586-ISC  
CENTER LITIGATION

VIDEO DEPOSITION OF ANAND DAVID KASBEKAR, PH.D.

December 13, 2019

REPORTED BY: Sandra L. Bray

<p>1 APPEARANCES:</p> <p>2 ON BEHALF OF THE PLAINTIFFS:</p> <p>3 AMY M. ZEMAN, ESQ.</p> <p>4 Gibbs Law Group, LLP</p> <p>5 505 14th Street, Suite 1110</p> <p>6 Oakland, California 94612</p> <p>7 Phone: 510-350-4721</p> <p>8 Email: amz@classlawgroup.com</p> <p>9 ON BEHALF OF CHART, INC.:</p> <p>10 BENJAMIN P. SMITH, ESQ.</p> <p>11 Morgan, Lewis &amp; Bockius, LLP</p> <p>12 One Market, Spear Street Tower</p> <p>13 San Francisco, California 94105</p> <p>14 Phone: 415-442-1000</p> <p>15 Email: benjamin.smith@morganlewis.com</p> <p>16 ON BEHALF OF THE DEFENDANTS PRELUDE FERTILITY, INC.</p> <p>17 AND PACIFIC MSO, LLC:</p> <p>18 WILLIAM F. TARANTINO, ESQ.</p> <p>19 Morrison &amp; Foerster, LLP</p> <p>20 425 Market Street</p> <p>21 San Francisco, California 94105</p> <p>22 Phone: 415-442-1000</p> <p>23 Email: wtarrantino@mofo.com</p> <p>24</p> <p>25 ON BEHALF OF THE THIRD-PARTY DEFENDANTS PACIFIC</p> <p>26 FERTILITY CENTER, ELDON SCHRIOCK, CAROLYN GIVENS,</p> <p>27 PHILIP CHENETTE, CARL HERBERT, LIYUN LI, AND ISABELLE</p> <p>28 RYAN:</p> <p>29 AARON SCHULTZ, ESQ. (via telephone)</p> <p>30 Galloway Lucchese Everson &amp; Picchi, P.C.</p> <p>31 2300 Contra Costa Boulevard</p> <p>32 Pleasant Hill, California 94523</p> <p>33 Phone: 925-930-9090</p> <p>34 Email: aschultz@glatlys.com</p> <p>35 Also present:</p> <p>36 Robert Reitan, Videographer</p> <p>37</p> <p>38</p> <p>39</p> <p>40</p> <p>41</p> <p>42</p> <p>43</p> <p>44</p> <p>45</p> <p>Page 2</p>	<p>1 PROCEEDINGS</p> <p>2 THE VIDEOGRAPHER: Good morning. We are 09:38:34</p> <p>3 on the record at 9:38 a.m. on December 13th, 2019. 09:38:42</p> <p>4 Please note that microphones are 09:38:46</p> <p>5 sensitive and may pick up whispering, private 09:38:46</p> <p>6 conversations, and cellular interference. Please turn 09:38:52</p> <p>7 off all cell phones or place them away from 09:38:53</p> <p>8 microphones as they can interfere with the deposition 09:38:55</p> <p>9 audio. Audio and video recording will continue to 09:38:58</p> <p>10 take place until all parties have agreed to go off the 09:39:00</p> <p>11 record. 09:39:04</p> <p>12 This is Media Unit 1 of the video- 09:39:05</p> <p>13 recorded deposition of Anand David Kasbekar, Ph.D. 09:39:09</p> <p>14 taken by counsel for the Defendant in the matter of In 09:39:12</p> <p>15 Re: Pacific Fertility Center Litigation, filed in the 09:39:15</p> <p>16 United States District Court, Northern District of 09:39:20</p> <p>17 California, San Francisco Division, Case Number 09:39:22</p> <p>18 3:18-cv-01586-JSC. 09:39:26</p> <p>19 This deposition is being held at 09:39:31</p> <p>20 Morrison &amp; Foerster, LLP, located at 4200 Republic 09:39:36</p> <p>21 Plaza, 370 17th Street, Denver, Colorado. My name is 09:39:43</p> <p>22 Robert Reitan, and I am the videographer. The court 09:39:49</p> <p>23 reporter is Sandra Bray. 09:39:49</p> <p>24 I am not authorized to administer the 09:39:49</p> <p>25 oath. I am not related to any party in this action, 09:39:52</p> <p>Page 4</p>
<p>1 PURSUANT TO WRITTEN NOTICE and the</p> <p>2 appropriate rules of civil procedure, the deposition</p> <p>3 OF ANAND DAVID KASBEKAR, PH.D., called for examination</p> <p>4 by the Defendant Chart, Inc., was taken at Morrison &amp;</p> <p>5 Foerster, LLP, 370 17th Street, Suite 4200, Denver,</p> <p>6 Colorado, commencing at 9:38 a.m. on December 13,</p> <p>7 2019, before Sandra L. Bray, a Registered Diplomat</p> <p>8 Reporter, Certified Realtime Reporter, and Notary</p> <p>9 Public in and for the State of Colorado.</p> <p>10</p> <p>11 INDEX</p> <p>12 EXAMINATION: PAGE</p> <p>13 By Mr. Smith 6</p> <p>14 By Mr. Tarantino 180</p> <p>15 By Ms. Zeman 183</p> <p>16</p> <p>17 EXHIBITS: PAGE</p> <p>18 Exhibit 1 Failure Analysis of Chart MVE 808AF-GB 32</p> <p>19 Cryopreservation Tank, 10/15/19</p> <p>20</p> <p>21 Exhibit 2 Photograph 58</p> <p>22</p> <p>23 Exhibit 3 Chart Important Recall Notice, 4/23/18 75</p> <p>24</p> <p>25 Exhibit 4 Drawing I/O Assy 89</p> <p>26</p> <p>27 Exhibit 5 Drawing Pumpout Port S/A 101</p> <p>28</p> <p>29 Exhibit 6 Chart, Inc. 10/18/19 Maximum Event 153</p> <p>30 Log</p> <p>31</p> <p>32 Exhibit 7 Chart/MVE Cryobiological Training 163</p> <p>33</p> <p>34</p> <p>35</p> <p>36</p> <p>37</p> <p>38</p> <p>39</p> <p>40</p> <p>41</p> <p>42</p> <p>43</p> <p>44</p> <p>45</p> <p>Page 3</p>	<p>1 nor am I financially interested in the outcome. 09:39:55</p> <p>2 Counsel and all present in the room and 09:39:57</p> <p>3 everyone attending remotely will now state their 09:39:59</p> <p>4 appearances and affiliations for the record. If there 09:40:02</p> <p>5 are any objections to proceeding, please state them at 09:40:05</p> <p>6 the time of your appearances, beginning with the 09:40:08</p> <p>7 noticing attorney. 09:40:11</p> <p>8 MR. SMITH: Ben Smith on behalf of 09:40:11</p> <p>9 Chart. 09:40:14</p> <p>10 MR. TARANTINO: Bill Tarantino on behalf 09:40:14</p> <p>11 of Prelude Fertility, Inc. and Pacific MSO, LLC. 09:40:18</p> <p>12 MS. ZEMAN: Amy Zeman with Gibbs Law 09:40:20</p> <p>13 Group on behalf of the class Plaintiffs. 09:40:23</p> <p>14 THE VIDEOGRAPHER: Will our court 09:40:26</p> <p>15 reporter please swear in the witness? 09:40:27</p> <p>16 MR. TARANTINO: Aaron, did you want to 09:40:30</p> <p>17 make an appearance? 09:40:32</p> <p>18 MR. SCHULTZ: Yes. I was waiting to 09:40:34</p> <p>19 make sure he was done. This is Aaron Schultz on 09:40:36</p> <p>20 behalf of Third-Party Defendants Pacific Fertility 09:40:39</p> <p>21 Center, Eldon Schriock, Carolyn Givens, Philip 09:40:42</p> <p>22 Chenette, Carl Herbert, Liyun Li, and Isabelle Ryan. 09:40:46</p> <p>23 THE VIDEOGRAPHER: Will our court 09:40:52</p> <p>24 reporter please swear in the witness? 09:40:53</p> <p>25 ANAND DAVID KASBEKAR, Ph.D., 09:40:53</p> <p>Page 5</p>

<p>1 having been first duly sworn or affirmed to state the 09:40:53</p> <p>2 whole truth, testified as follows: 09:40:53</p> <p>3 EXAMINATION 09:40:53</p> <p>4 BY MR. SMITH: 09:41:10</p> <p>5 Q. Good morning again, Dr. Kasbekar. How 09:41:10</p> <p>6 are you? 09:41:12</p> <p>7 A. I'm doing well. How about you? 09:41:12</p> <p>8 Q. I'm good. Can you state and spell your 09:41:15</p> <p>9 name for the record? 09:41:17</p> <p>10 A. Yes, it's Anand David Kasbekar. First 09:41:18</p> <p>11 name is spelled A-n-a-n-d, middle name David, last 09:41:21</p> <p>12 name K-a-s-b-e-k-a-r. 09:41:25</p> <p>13 Q. And you've been deposed many times 09:41:28</p> <p>14 before, right? 09:41:31</p> <p>15 A. I have. 09:41:31</p> <p>16 Q. Is there any reason why you cannot 09:41:32</p> <p>17 provide your most accurate, truthful testimony today? 09:41:34</p> <p>18 A. No. 09:41:36</p> <p>19 Q. Okay. Who first contacted you about 09:41:37</p> <p>20 potential work in this case? 09:41:39</p> <p>21 A. I believe it was Dylan Hughes. 09:41:40</p> <p>22 Q. And who is Dylan Hughes associated with? 09:41:44</p> <p>23 A. Dylan Hughes is associated with Amy 09:41:48</p> <p>24 Zeman's firm, Girard Gibbs. 09:41:52</p> <p>25 Q. Now called the Gibbs Law Group? 09:41:54</p> <p style="text-align: right;">Page 6</p>	<p>1 you previously worked on? 09:43:29</p> <p>2 A. I'd say give or take a couple. 09:43:31</p> <p>3 Q. Did you work with Dan Girard or Eric 09:43:33</p> <p>4 Gibbs, if any of those two individuals, in those 09:43:36</p> <p>5 cases? 09:43:38</p> <p>6 A. I primarily worked with Eric Gibbs and 09:43:39</p> <p>7 Dylan Hughes, and I'm certain there were a few other 09:43:42</p> <p>8 cases. I know there were a couple cases that really 09:43:47</p> <p>9 never went anywhere or I indicated that I wasn't the 09:43:51</p> <p>10 appropriate expert for the case. 09:43:54</p> <p>11 Q. Did you testify at deposition or at 09:43:57</p> <p>12 trial at any of the six cases that you mentioned? 09:44:02</p> <p>13 A. I'm certain in the flywheel case, I 09:44:07</p> <p>14 provided deposition testimony. In the manifold case, 09:44:09</p> <p>15 I would have provided deposition testimony. 09:44:18</p> <p>16 Q. When did you first meet or have contact 09:44:24</p> <p>17 with either Dylan Hughes or Eric Gibbs? 09:44:28</p> <p>18 A. I don't know the exact answer to that. 09:44:33</p> <p>19 Probably on the order of ten years ago, some time ago. 09:44:35</p> <p>20 Q. And how did you come about meeting them? 09:44:40</p> <p>21 A. I think they were involved in a lawsuit 09:44:42</p> <p>22 where I'd been hired by another firm. I think it was 09:44:50</p> <p>23 the manifold case, but I'm not positive, and I believe 09:44:53</p> <p>24 that's how I met both Eric and Dylan Hughes. 09:44:56</p> <p>25 Q. Is your retention agreement with the 09:44:59</p> <p style="text-align: right;">Page 8</p>
<p>1 A. I believe so. 09:41:58</p> <p>2 Q. And do you know how the Gibbs Law Group 09:41:58</p> <p>3 came to identify you as a potential expert? 09:42:00</p> <p>4 A. I had worked with them on other failures 09:42:03</p> <p>5 related cases in the past. 09:42:06</p> <p>6 Q. And what were those cases that you 09:42:07</p> <p>7 worked on with them in the past? 09:42:09</p> <p>8 A. One involved a clutch flywheel defect 09:42:10</p> <p>9 issue in automobiles. I believe that they were -- I 09:42:21</p> <p>10 don't know if they were the ones who hired me, but 09:42:25</p> <p>11 they were involved in a case that involved cracking 09:42:27</p> <p>12 manifolds in automobiles. 09:42:31</p> <p>13 I was involved in evaluating a 09:42:36</p> <p>14 manufacturing-related defect -- I don't think this was 09:42:40</p> <p>15 a litigation -- or I don't know that it went to 09:42:44</p> <p>16 litigation -- in Honda automobiles. 09:42:48</p> <p>17 I was involved in a case where flat 09:42:58</p> <p>18 screen TVs were failing and TVs were falling off the 09:43:01</p> <p>19 wall, looking at the mount system. 09:43:06</p> <p>20 I was involved in a case with failure 09:43:08</p> <p>21 issues related to Ducati motorcycle tanks that Girard 09:43:12</p> <p>22 Gibbs or the Gibbs law firm was involved in. Those 09:43:19</p> <p>23 are, I think, most if not all of them. 09:43:21</p> <p>24 Q. Okay. So you looked at approximately 09:43:24</p> <p>25 six cases. Is that approximately the number of cases 09:43:26</p> <p style="text-align: right;">Page 7</p>	<p>1 Gibbs Law Group? 09:45:02</p> <p>2 A. That's my understanding. 09:45:03</p> <p>3 Q. You're not aware of any other retention 09:45:04</p> <p>4 agreements with other Plaintiffs' firms who are 09:45:08</p> <p>5 Plaintiffs in this case? 09:45:12</p> <p>6 A. You know, I really haven't paid much 09:45:12</p> <p>7 attention to that. My understanding is I was hired by 09:45:15</p> <p>8 the Gibbs Law Group. I know there was co-counsel I've 09:45:17</p> <p>9 met throughout the course. I don't know the financial 09:45:21</p> <p>10 agreements or relations between the various firms. 09:45:23</p> <p>11 Q. Okay. Were you retained as an 09:45:25</p> <p>12 individual or were you retained through Visual 09:45:27</p> <p>13 Sciences, your company? 09:45:30</p> <p>14 A. I think I was really retained as an 09:45:32</p> <p>15 individual, but that's -- again, the retention was a 09:45:34</p> <p>16 verbal retention by phone. It was informal. 09:45:39</p> <p>17 Q. Do you recall approximately when your 09:45:43</p> <p>18 retention was? 09:45:46</p> <p>19 A. I want to -- I don't. I want to say it 09:45:46</p> <p>20 may have been -- I'm trying to think in terms of the 09:45:56</p> <p>21 timing. It may have been in April of 2018, or at 09:46:00</p> <p>22 least that was when the initial discussions took 09:46:05</p> <p>23 place. 09:46:06</p> <p>24 Q. Okay. Do you still own the company 09:46:06</p> <p>25 Visual Sciences? 09:46:11</p> <p style="text-align: right;">Page 9</p>

1 A. I do. 09:46:12	1 1 hour for testimony; is that right? 09:48:43
2 Q. You're the principal owner of that 09:46:12	2 A. I think the \$50 is built into the 495. 09:48:44
3 company? 09:46:15	3 Q. Right. Your testifying rate is \$50 09:48:48
4 A. I am. 09:46:15	4 more -- 09:48:53
5 Q. Has anybody within that company worked 09:46:16	5 A. Right. 09:48:53
6 on this case with you? 09:46:17	6 Q. -- than your nontestifying rate -- 09:48:53
7 A. No. 09:46:19	7 A. Correct. 09:48:55
8 Q. And Research Engineers, Inc. is a 09:46:19	8 Q. -- is that right? 09:48:55
9 consulting group for whom you perform consulting? 09:46:24	9 A. Yes. 09:48:56
10 A. I was an employee for a long period of 09:46:24	10 Q. And why is that? 09:48:57
11 time and then a consultant with them. 09:46:30	11 A. Well, in the past, it was mainly 09:48:58
12 Q. And have they played any role in -- 09:46:30	12 required me to leave the office. And for a long 09:49:00
13 A. No. 09:46:33	13 period of time, we had a number of government 09:49:03
14 Q. -- this case? Okay. Is it fair to say 09:46:33	14 contracts, and when I left the office, it was 09:49:06
15 that the majority of your work as a failure analysis 09:46:40	15 detrimental to the efficiency of what was going on; 09:49:08
16 expert is in the automobile industry? 09:46:44	16 and it just has remained that way ever since. 09:49:11
17 A. No, that would not be a fair statement. 09:46:47	17 Q. Okay. Are the rates that you're 09:49:15
18 Q. What is your emphasis as a failure 09:46:48	18 charging the Gibbs Law Group the same rates that you 09:49:15
19 analysis expert? 09:46:52	19 charge other clients? 09:49:16
20 A. I mean, my emphasis is on metal and 09:46:54	20 A. Yes. 09:49:18
21 plastic components, and over almost a 35-year period, 09:46:57	21 Q. And how many hours, approximately, have 09:49:18
22 I've looked at things ranging from bicycle components 09:47:02	22 you devoted to date to your work on this case? 09:49:22
23 to automotive components to boiler tanks. I mean I 09:47:08	23 A. I don't know the answer to that. I can 09:49:24
24 could go on for hours. 09:47:14	24 kind of approximate it. 09:49:27
25 Q. Okay. 09:47:15	25 Q. Can you give me an approximation? 09:49:29
Page 10	Page 12
1 A. Various different mechanical components. 09:47:16	1 A. I'm going to say on the order of maybe 09:49:31
2 When I was hired by Research Engineers in 1987, I was 09:47:22	2 100 hours, give or take 20 hours. 09:49:34
3 hired primarily to do their failure analysis work and 09:47:27	3 Q. Is it your estimation that you've billed 09:49:38
4 also to help them develop their computer facilities. 09:47:30	4 the Gibbs Law Group approximately \$45,000 for your 09:49:48
5 Q. If I added up all the times you've 09:47:34	5 work to date? 09:49:52
6 testified, would it be fair to say that you've 09:47:38	6 A. I don't know the answer to that, but I 09:49:52
7 testified most often in cases involving automobile 09:47:40	7 think it would be somewhere in that range. 09:49:54
8 accidents? 09:47:43	8 Q. Okay. Do you work as an expert witness 09:49:55
9 A. No, I don't know if that would be 09:47:47	9 almost full time? 09:49:58
10 necessarily true. 09:47:50	10 A. No. 09:49:59
11 Q. Okay. 09:47:52	11 Q. What else do you do? 09:49:59
12 A. I mean, I do minimal accident 09:47:53	12 A. In fact, I work very little as an expert 09:50:00
13 reconstruction work from automobile accidents. 09:47:57	13 witness these days. I have started trying to enter 09:50:03
14 Research Engineers does that. My role normally was -- 09:48:01	14 early retirement. 09:50:09
15 we have a broken axle, so one of the other individuals 09:48:06	15 Q. And when did you start to enter early 09:50:10
16 at Research Engineers would have evaluated the vehicle 09:48:09	16 retirement? 09:50:15
17 dynamics, done the accident reconstruction, and I 09:48:15	17 A. I started the process in 2016, winding 09:50:15
18 would have been looking at the failed axle or the 09:48:16	18 down my company and moved out to here part time. 09:50:20
19 failed lug nut or the failed wheel. 09:48:18	19 Q. Prior to 2016, did you work as an expert 09:50:25
20 Q. Have you ever before conducted a failure 09:48:21	20 witness almost full time? 09:50:30
21 analysis of a cryogenic tank? 09:48:25	21 A. No. For the first seven years of my 09:50:32
22 A. I don't believe so. 09:48:27	22 career, I was a graduate student in the engineering 09:50:37
23 Q. You are charging the Gibbs Group law 09:48:29	23 department at Duke University while working for 09:50:41
24 firm, I think, between \$445 and \$495 per hour for the 09:48:34	24 Research Engineers. I was a teaching assistant and 09:50:44
25 time you spent on this case, with an extra \$50 per 09:48:39	25 research assistant during those times. 09:50:50
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1 And then shortly after receiving my 09:50:52	1 today's deposition, if anything? 09:53:09
2 graduate degree or my Ph.D. in '94, I was awarded 09:50:54	2 A. I reviewed my report. I printed out and 09:53:10
3 various research contracts with the Department of 09:51:01	3 reviewed the references to my report. I reread 09:53:15
4 Defense that occupied probably anywhere from 50 to 09:51:05	4 Dr. Conaghan's deposition, went through various 09:53:24
5 80 percent of my time. I don't remember when we -- 09:51:09	5 documents, met with Ms. Zeman for about 45 minutes or 09:53:28
6 our last contract expired, but after that expired, I 09:51:14	6 so last night. 09:53:36
7 would say for a period of -- I don't know -- probably 09:51:17	7 Q. Anything else? 09:53:37
8 four or five, six years, the majority of my work was 09:51:21	8 A. Mainly document review. 09:53:41
9 litigation-related, probably 80 percent. 09:51:24	9 Q. Have you had any conversations with 09:53:47
10 Q. And in that regard, you've testified at 09:51:28	10 anyone other than Ms. Zeman about your deposition? 09:53:48
11 deposition or at trial well over a hundred times, 09:51:30	11 A. Dylan Hughes briefly. 09:53:51
12 right? 09:51:33	12 Q. Anyone other Ms. Zeman or Dylan Hughes? 09:53:55
13 A. Well, certainly not well over a hundred 09:51:34	13 A. No, not regarding my deposition. 09:53:59
14 trials, but depositions, yes, I'd say over a hundred 09:51:36	14 Q. Okay. How about regarding this case? 09:54:00
15 depositions. 09:51:39	15 A. I spoke with a machinist back in North 09:54:02
16 Q. And is it correct that the vast majority 09:51:39	16 Carolina early on when we were talking about 09:54:07
17 of the time you testify on behalf of plaintiffs? 09:51:41	17 destructive testing of the subject tank and trying to 09:54:10
18 A. I would probably say the majority of 09:51:44	18 gain access to the bottom of the tank, removing the 09:54:16
19 cases that have gone to trial are plaintiffs. My 09:51:47	19 panel, mainly with regard to trying to get ideas on 09:54:19
20 workload is pretty well-balanced, especially in the 09:51:50	20 how to efficiently and with minimal destruction get 09:54:23
21 past -- over the past probably ten, fifteen years 09:51:53	21 the panel out of there. 09:54:29
22 between defense and plaintiffs. 09:51:56	22 Q. You're talking about the false bottom in 09:54:30
23 Q. And why is it that the vast majority of 09:51:58	23 the tank? 09:54:33
24 the cases that you've testified in, either at 09:52:01	24 A. The false bottom. Exactly. 09:54:33
25 deposition or trial, are plaintiff -- for the 09:52:03	25 Q. And what was the name of the machinist 09:54:44
Page 14	Page 16
1 plaintiff? 09:52:06	1 in North Carolina that you spoke with about removal of 09:54:46
2 A. So -- 09:52:07	2 the false bottom? 09:54:49
3 MS. ZEMAN: Objection, misstates 09:52:08	3 A. Don Chesson. 09:54:50
4 testimony. 09:52:09	4 Q. And is he affiliated with any of your 09:54:53
5 A. My interpretation of that is a lot of 09:52:09	5 companies? 09:54:57
6 times I'll get hired by defense firms where the 09:52:14	6 A. No. 09:54:57
7 defendant, quite frankly, just may have a big problem, 09:52:19	7 Q. How do you know him? 09:54:57
8 and I'll help out where I can, but oftentimes those 09:52:22	8 A. He has worked with me on various 09:55:03
9 cases are better resolved by settling them, I mean, if 09:52:26	9 projects where I've had to design and build test 09:55:04
10 there's a defect and there's not much that can be done 09:52:30	10 fixtures throughout the years. 09:55:08
11 to help. Normally most defendants will attempt to 09:52:33	11 Q. Did you pay him for his consultation? 09:55:09
12 settle those cases, sometimes prior to deposition and 09:52:38	12 A. I did not. 09:55:12
13 prior to trial; whereas based on my experience, 09:52:40	13 Q. Okay. 09:55:12
14 plaintiffs -- and I guess this is because maybe 09:52:45	14 A. It was a two-minute -- five-minute phone 09:55:13
15 they're funding their own cases -- are a little bit 09:52:47	15 call. 09:55:16
16 more careful about making sure they have a case that 09:52:50	16 Q. Did you review the TEC 3000 controller 09:55:18
17 has merit. That's kind of my take on it. That's not 09:52:52	17 data that was obtained after you wrote your report in 09:55:23
18 an expert opinion, but my observations. 09:52:55	18 preparation for your deposition? 09:55:27
19 Q. (BY MR. SMITH) Okay. Do you do any 09:52:58	19 A. Very briefly when I initially got it, 09:55:30
20 advertising? 09:53:00	20 but it's not something that I have really focused on. 09:55:33
21 A. I do not. 09:53:01	21 Q. Okay. And why not? 09:55:36
22 Q. Is all of the work that you do as a 09:53:01	22 A. It's -- in my mind, there's some 09:55:37
23 consulting and testifying expert referral work? 09:53:04	23 questions right now that require some interpretation 09:55:44
24 A. It is. 09:53:06	24 that might be outside of my area of expertise. In 09:55:48
25 Q. Okay. What did you do to prepare for 09:53:06	25 addition, the finding of the crack in the inner weld 09:55:51
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<p>1 of the fill line has really been the focus of where I 09:56:00</p> <p>2 thought my efforts were best expended. 09:56:05</p> <p>3 Q. What questions did you have about the 09:56:08</p> <p>4 data that you thought might be outside your area of 09:56:08</p> <p>5 expertise? 09:56:10</p> <p>6 A. Well, one question, I think there's 09:56:10</p> <p>7 issues with regarding to the time on the controller, 09:56:12</p> <p>8 the time stamp and what it refers to, and I know 09:56:16</p> <p>9 discovery is ongoing; and I'm hoping or assuming that 09:56:18</p> <p>10 we might have a little bit more insight with regard to 09:56:23</p> <p>11 that. I think that's one of the areas. 09:56:26</p> <p>12 And then just not being the person who 09:56:30</p> <p>13 would go in and determine do we have a firmware issue, 09:56:35</p> <p>14 do we have a circuit issue. Those are the main things 09:56:39</p> <p>15 that I feel would -- I would rely upon somebody else 09:56:46</p> <p>16 to evaluate. 09:56:51</p> <p>17 Q. And you're referring to a firmware issue 09:56:51</p> <p>18 or a circuit issue within the controller itself -- 09:56:54</p> <p>19 A. Correct. 09:57:00</p> <p>20 Q. -- is that right? 09:57:00</p> <p>21 A. Correct. 09:57:01</p> <p>22 Q. And does that issue have anything to do 09:57:01</p> <p>23 with the data that was obtained from the controller, 09:57:02</p> <p>24 in your mind? 09:57:04</p> <p>25 A. It certainly is a possibility. 09:57:05</p> <p style="text-align: right;">Page 18</p>	<p>1 stress to plastic samples? 09:58:18</p> <p>2 A. Basically thermal cycling them. 09:58:18</p> <p>3 Q. And that wasn't the design or 09:58:21</p> <p>4 development of the cryogenic freezer, right? 09:58:22</p> <p>5 A. No. It was really nitrogen cooling and 09:58:25</p> <p>6 electrical heating to control sample temperature. 09:58:29</p> <p>7 Q. Prior to your retention in this case, 09:58:31</p> <p>8 had you ever seen a cryogenic freezer? 09:58:37</p> <p>9 A. Yes. 09:58:38</p> <p>10 Q. Where? 09:58:38</p> <p>11 A. Throughout Duke University, in medical 09:58:39</p> <p>12 facilities, in biomedical facilities. 09:58:45</p> <p>13 Q. And Duke uses Chart tanks, right? 09:58:48</p> <p>14 A. You may know the answer better than me. 09:58:53</p> <p>15 I haven't paid attention to whose name is on the 09:58:55</p> <p>16 tanks. It was normally, as a graduate student, 09:59:00</p> <p>17 filling up small dewars and taking the nitrogen to 09:59:04</p> <p>18 places, but air gas is what I'm used to seeing. 09:59:08</p> <p>19 Q. You don't remember the label on the 09:59:12</p> <p>20 tanks? 09:59:13</p> <p>21 A. I certainly don't. 09:59:14</p> <p>22 Q. Once you were retained in this case, 09:59:15</p> <p>23 what did you do to familiarize yourself with cryogenic 09:59:16</p> <p>24 tanks, generally? 09:59:20</p> <p>25 A. I think early on, I was looking for 09:59:23</p> <p style="text-align: right;">Page 20</p>
<p>1 Q. Did your review of the controller data, 09:57:07</p> <p>2 even though brief, did it change any of your opinions 09:57:16</p> <p>3 or influence any of your opinions that are contained 09:57:19</p> <p>4 in your report? 09:57:21</p> <p>5 A. It has not, but as I said, I've also not 09:57:22</p> <p>6 thoroughly analyzed the controller data. 09:57:26</p> <p>7 Q. You're a mechanical engineer, right? 09:57:29</p> <p>8 A. Correct. 09:57:36</p> <p>9 Q. You're not an electrical engineer? 09:57:36</p> <p>10 A. I am not. 09:57:38</p> <p>11 Q. You're not a cryogenic engineer? 09:57:41</p> <p>12 A. I am not. 09:57:45</p> <p>13 Q. Have you ever designed or developed a 09:57:46</p> <p>14 cryogenic freezer? 09:57:49</p> <p>15 A. The only thing close to it that I've 09:57:51</p> <p>16 done is in graduate school, the samples I was working 09:57:51</p> <p>17 on were cryogenically cooled and heated for some of 09:57:53</p> <p>18 the work that was done by myself and to support some 09:57:59</p> <p>19 professors, but it was on a much smaller scale than a 09:58:03</p> <p>20 tank. 09:58:07</p> <p>21 Q. And what were the samples that you were 09:58:07</p> <p>22 working with? 09:58:09</p> <p>23 A. They were various plastic stuff for most 09:58:09</p> <p>24 of the samples that would involve colder temperatures. 09:58:13</p> <p>25 Q. So you were applying cold and heat 09:58:16</p> <p style="text-align: right;">Page 19</p>	<p>1 examples of implosions. Honestly, I've seen tank 09:59:29</p> <p>2 explosions in some of the cases I've been involved in, 09:59:36</p> <p>3 but I haven't seen an implosion similar to the one 09:59:40</p> <p>4 that we had here. So I was looking for information 09:59:42</p> <p>5 about that. I had a theory as to how I thought it 09:59:45</p> <p>6 happened, but I hadn't looked at the tank closely at 09:59:50</p> <p>7 that point. I think that was the main thing that I 09:59:56</p> <p>8 was looking at. 09:59:58</p> <p>9 Q. Is it your view -- not your view. Is 10:00:02</p> <p>10 the word that you used to describe what happened to 10:00:08</p> <p>11 Tank 4 an implosion or an explosion? 10:00:11</p> <p>12 A. So my opinion really is I would call it 10:00:13</p> <p>13 an explosion of the vacuum space, but I think it's 10:00:17</p> <p>14 fair to also call it an implosion of the inner wall of 10:00:20</p> <p>15 the tank. It's -- normally when I think of an 10:00:23</p> <p>16 implosion, I think of -- and in cryogenic tanks and 10:00:27</p> <p>17 failure analysis, it's normally when you've sucked a 10:00:29</p> <p>18 vacuum on the internal tank space, and where you often 10:00:33</p> <p>19 see it is in tankers and -- where there's been an 10:00:36</p> <p>20 issue, and it's pretty dramatic when you have the loss 10:00:41</p> <p>21 of pressure inside the tank and atmospheric pressure 10:00:45</p> <p>22 bearing down on the outside of the tank. 10:00:48</p> <p>23 Q. I totally agree because the words are 10:00:48</p> <p>24 funky. 10:00:50</p> <p>25 A. But your client uses, to the best of my 10:00:51</p> <p style="text-align: right;">Page 21</p>



<p>1 knowledge, the word "implosion," which I think -- I 10:00:55</p> <p>2 don't know if it's technically incorrect or not. It's 10:00:58</p> <p>3 kind of tomato, tomato. 10:01:01</p> <p>4 Q. I think the reference might be implosion 10:01:04</p> <p>5 towards the midline of the tank. I think that might 10:01:04</p> <p>6 be it, but just so we're clear, when we say 10:01:08</p> <p>7 "implosion" or "explosion," we're referring to 10:01:09</p> <p>8 pressure being exerted against both the inside and 10:01:11</p> <p>9 outside of the tank walls with the thinner tank walls 10:01:14</p> <p>10 buckling. Is that fair? 10:01:18</p> <p>11 A. Well, I don't know if I'd phrase it that 10:01:21</p> <p>12 way. If you're going to argue it's an implosion, you 10:01:23</p> <p>13 have a lower pressure on the interior of the tank than 10:01:26</p> <p>14 you do on the exterior of the interior tank wall. 10:01:29</p> <p>15 Does that make sense? 10:01:32</p> <p>16 Q. That makes sense. 10:01:33</p> <p>17 A. So that would -- the lack of pressure on 10:01:35</p> <p>18 the inside or the imbalance, you could argue, would be 10:01:36</p> <p>19 an implosion. I really look at it more as if the 10:01:39</p> <p>20 vacuum space becomes a balloon and nitrogen gas 10:01:44</p> <p>21 expands within that vacuum space or balloon, you're 10:01:48</p> <p>22 exploding that vacuum space. The outside wall is more 10:01:51</p> <p>23 robust than the inside wall, so the damage occurs to 10:01:57</p> <p>24 the inside wall. 10:02:00</p> <p>25 Q. All right. Let's use the word 10:02:00</p> <p style="text-align: right;">Page 22</p>	<p>9 Q. Well, we have an estimate, don't we, 10:03:42</p> <p>10 because according to Dr. Conaghan's testimony, the 10:03:44</p> <p>11 tank was filled to 14 inches, right? 10:03:47</p> <p>12 A. Right. 10:03:50</p> <p>13 Q. And your calculations are that there's 10:03:50</p> <p>14 approximately 10 liters per inch, correct? 10:03:53</p> <p>15 A. Well, that's not my calculation -- well, 10:03:55</p> <p>16 initially, it kind of was, but Chart publishes that 10:03:57</p> <p>17 number of a 10 point something liters per inch. The 10:04:01</p> <p>18 only thing I can tell you is since the contents end 10:04:06</p> <p>19 at, I believe, 11 inches and it was reportedly filled 10:04:11</p> <p>20 to 14, we have 3 inches at about 10 liters per inch, 10:04:13</p> <p>21 so that's going to give us at least 30 liters above 10:04:17</p> <p>22 the contents plus whatever you have down there. So 10:04:20</p> <p>23 there was sufficient nitrogen at the end of the fill 10:04:24</p> <p>24 in my opinion to fill up the vacuum space likely up to 10:04:28</p> <p>25 the point and perhaps beyond the point of the crack. 10:04:33</p> <p style="text-align: right;">Page 24</p>
<p>1 "explosion." 10:02:02</p> <p>2 A. Fair enough. 10:02:03</p> <p>3 [REDACTED]</p> <p>4 [REDACTED]</p> <p>5 [REDACTED]</p> <p>6 [REDACTED]</p> <p>7 [REDACTED]</p> <p>8 [REDACTED]</p> <p>9 [REDACTED]</p> <p>10 [REDACTED]</p> <p>11 [REDACTED]</p> <p>12 [REDACTED]</p> <p>13 [REDACTED]</p> <p>14 [REDACTED]</p> <p>15 [REDACTED]</p> <p>16 [REDACTED]</p> <p>17 [REDACTED]</p> <p>18 [REDACTED]</p> <p>19 [REDACTED]</p> <p>20 [REDACTED]</p> <p>21 [REDACTED]</p> <p>22 [REDACTED]</p> <p>23 [REDACTED]</p> <p>24 [REDACTED]</p> <p>25 [REDACTED] 03</p> <p style="text-align: right;">Page 23</p>	<p>1 Q. All right. We'll get into that in more 10:04:37</p> <p>2 detail in a bit. When you said that you -- well, 10:04:42</p> <p>3 strike that. Did you say that you did some research 10:04:54</p> <p>4 on explosions of tanks after you were retained in this 10:04:56</p> <p>5 case? 10:05:00</p> <p>6 A. I was looking for a -- any case studies 10:05:00</p> <p>7 that would have shown similar damage to what we were 10:05:07</p> <p>8 seeing on the subject tank. 10:05:11</p> <p>9 Q. And did you find any? 10:05:13</p> <p>10 A. I don't know that I found any that 10:05:14</p> <p>11 were -- had pictures or sufficient information really 10:05:17</p> <p>12 to be similar. Certainly there are cases where in 10:05:20</p> <p>13 storage tanks there have been issues and explosions 10:05:27</p> <p>14 because nitrogen has gotten into the vacuum space and 10:05:30</p> <p>15 for other reasons, but I didn't find a dewar -- a 10:05:34</p> <p>16 written-up case with a dewar similar to this freezer 10:05:39</p> <p>17 that had a similar failure mode. 10:05:45</p> <p>18 Q. Do you have any education in cryogenic 10:05:48</p> <p>19 engineering? 10:05:52</p> <p>20 A. No, my real experience with cryogenics, 10:05:53</p> <p>21 again, is using equipment that had nitrogen-cooled 10:05:57</p> <p>22 detectors and dealing with replenishing that 10:06:00</p> <p>23 equipment. 10:06:04</p> <p>24 Q. Do you consider yourself an expert on 10:06:04</p> <p>25 the design of cryogenic storage tanks? 10:06:06</p> <p style="text-align: right;">Page 25</p>



<p>1 A. I think I have materials and mechanical 10:06:09</p> <p>2 engineering skills that pertain to the design of 10:06:11</p> <p>3 cryogenic storage tanks. Am I an expert designer of 10:06:14</p> <p>4 cryogenic storage tanks? No, but I certainly think I 10:06:23</p> <p>5 have the skills to evaluate a failure of a cryogenic 10:06:26</p> <p>6 storage tank, and if I felt I was lacking in one area, 10:06:26</p> <p>7 I would seek expertise in that area. 10:06:28</p> <p>8 Q. Has any company ever hired you to serve 10:06:32</p> <p>9 as a consultant regarding the design of a cryogenic 10:06:34</p> <p>10 storage tank? 10:06:37</p> <p>11 A. I've had failures of cryogenic tanks 10:06:39</p> <p>12 where I've been hired as a consultant to evaluate the 10:06:45</p> <p>13 failure, but not as a consultant to design or redesign 10:06:48</p> <p>14 the tank. 10:06:54</p> <p>15 Q. And in what matters were you hired as a 10:06:54</p> <p>16 consultant to assess the failure of a cryogenic 10:06:57</p> <p>17 storage tank? 10:07:00</p> <p>18 A. It was a liquid oxygen tank belonging to 10:07:01</p> <p>19 Air Liquide is the one that comes to mind. 10:07:06</p> <p>20 Q. And what happened? Was that a storage 10:07:11</p> <p>21 tank? 10:07:15</p> <p>22 A. It was a transport storage tank, and 10:07:15</p> <p>23 there was an explosion during the attempt to offload 10:07:17</p> <p>24 liquid oxygen, and I don't know if there's a lawsuit 10:07:21</p> <p>25 involved, but it is ongoing. So beyond that, I'd 10:07:27</p> <p style="text-align: right;">Page 26</p>	<p>1 that came up in my Ph.D. thesis. 10:08:44</p> <p>2 Q. Do you have any publications on 10:08:45</p> <p>3 electronic controllers? 10:08:46</p> <p>4 A. Do not. 10:08:48</p> <p>5 Q. Do you consider yourself an expert on 10:08:48</p> <p>6 electronic controllers? 10:08:51</p> <p>7 A. Not -- my expertise was limited to the 10:08:53</p> <p>8 electronic controls I implemented either as part of 10:08:56</p> <p>9 the work I did for the military, part of my graduate 10:09:00</p> <p>10 studies, or developing test fixtures for projects 10:09:03</p> <p>11 throughout the years. I am not at this point holding 10:09:08</p> <p>12 myself out as an expert in electronic controllers as 10:09:11</p> <p>13 it applies to the TEC 3000. 10:09:14</p> <p>14 Q. Okay. What were the electronic 10:09:17</p> <p>15 controllers that you worked on in your graduate days? 10:09:19</p> <p>16 A. So when I was -- first started my 10:09:22</p> <p>17 graduate program, my main job was to deal with 10:09:24</p> <p>18 computer control of data collection from the 10:09:27</p> <p>19 instrumentation that was being used in my advisor's 10:09:33</p> <p>20 lab. Because of the timing, I was one of the first 10:09:36</p> <p>21 generations of engineering students to get exposed to 10:09:40</p> <p>22 the PCs and actually got involved with LabVIEW and 10:09:44</p> <p>23 building some applications in LabVIEW to control other 10:09:47</p> <p>24 pieces of equipment. Then one of the major contracts 10:09:52</p> <p>25 I had with the Department of Defense involved wiring 10:09:54</p> <p style="text-align: right;">Page 28</p>
<p>1 probably be -- I really shouldn't answer any other 10:07:29</p> <p>2 questions pertaining to my findings or work done. 10:07:35</p> <p>3 Q. Was the explosion caused by an external 10:07:37</p> <p>4 ignition source? 10:07:41</p> <p>5 A. I believe so. I mean, there was -- 10:07:42</p> <p>6 individuals working on a valve that was stuck, and 10:07:47</p> <p>7 that was -- something went wrong. 10:07:49</p> <p>8 Q. Are you aware of any major changes to 10:07:51</p> <p>9 the basic design of cryogenic storage tanks over the 10:07:56</p> <p>10 past 40 years? 10:08:05</p> <p>11 A. I mean, I certainly know that there's 10:08:06</p> <p>12 much more computer monitoring, computer controls that 10:08:09</p> <p>13 are on these tanks than 25 years ago when I was 10:08:13</p> <p>14 working with them. 10:08:16</p> <p>15 Q. How about just with regard to the tank 10:08:16</p> <p>16 itself? 10:08:18</p> <p>17 A. Not particularly, no. 10:08:18</p> <p>18 Q. Have you published any papers on 10:08:19</p> <p>19 cryogenic engineering or cryogenic storage tanks? 10:08:26</p> <p>20 A. I have not. 10:08:30</p> <p>21 Q. Is it correct that your publications 10:08:31</p> <p>22 concern computer visualizations and animations and 10:08:34</p> <p>23 then protective gear? 10:08:35</p> <p>24 A. Yeah, my main publications were related 10:08:36</p> <p>25 to protective gear for the military and then the work 10:08:40</p> <p style="text-align: right;">Page 27</p>	<p>1 hundreds of sensors to a data acquisition and control 10:09:58</p> <p>2 system. So I do have expertise with temperature 10:10:01</p> <p>3 sensors, with data acquisition and display, but, 10:10:04</p> <p>4 again, this is a different -- my expertise are [sic] 10:10:13</p> <p>5 more on the computer side, the wiring side, and not on 10:10:16</p> <p>6 the firmware, the circuit board level. I mean, I've 10:10:20</p> <p>7 done some circuit board failure analysis, but it's 10:10:24</p> <p>8 looking at solder joints, not at the behavior of the 10:10:27</p> <p>9 firmware itself. 10:10:30</p> <p>10 Q. You had some role, I think, at Duke with 10:10:31</p> <p>11 regard to their computer systems, their network, 10:10:35</p> <p>12 right? 10:10:37</p> <p>13 A. Well, again, I was kind of the 10:10:37</p> <p>14 mechanical engineering department expert for a while 10:10:40</p> <p>15 on anything PC-related, ranging from data acquisition 10:10:44</p> <p>16 to setting up our network, to helping in the office if 10:10:51</p> <p>17 there was a networking issue. Just was, for better or 10:10:55</p> <p>18 worse, the timing. 10:11:00</p> <p>19 Q. It fell upon you? 10:11:01</p> <p>20 A. It did. It was probably for the worse. 10:11:02</p> <p>21 Q. You're not a metallurgist, right? 10:11:04</p> <p>22 A. I consider myself to be a materials 10:11:12</p> <p>23 engineer. That was kind of the program I went 10:11:13</p> <p>24 through. I've had experience in metals and plastics, 10:11:17</p> <p>25 but I would not call myself a metallurgist, per se. 10:11:20</p> <p style="text-align: right;">Page 29</p>

1 Q. What in your mind is the difference 10:11:24	1 and we are off the record. 10:14:02
2 between a materials engineer and metallurgist? 10:11:28	2 (Recess taken.) 10:14:04
3 A. I got training in metals, some in 10:11:32	3 (Deposition Exhibit 1 was marked.) 10:18:45
4 ceramics, in plastics also, and I didn't focus simply 10:11:35	4 THE VIDEOGRAPHER: The time is 10:18, 10:18:45
5 on metals, and I think it was partly, again, the 10:11:40	5 and we are back on the record. 10:18:49
6 timing of my generation. Semiconductor materials, 10:11:42	6 Q. (BY MR. SMITH) Dr. Kasbekar, I've 10:18:50
7 plastics, ceramics were part of the materials 10:11:46	7 marked as Exhibit 1 a copy of your report. Do you 10:18:52
8 curriculum, where maybe in the '50s through the '70s, 10:11:53	8 recognize it? 10:18:56
9 it was more focused on metals, but I had quite an 10:11:57	9 A. I do. 10:18:56
10 amount of training and experience with metallurgy and 10:12:01	10 Q. Did you write your report? 10:18:57
11 failure analysis of metals while in graduate school in 10:12:04	11 A. I did. 10:18:59
12 the 30-some years past. 10:12:08	12 Q. Were you assisted by anyone in the 10:19:00
13 Q. Were you the Graduate generation, "It's 10:12:10	13 preparation of your report? 10:19:03
14 all about plastics, Benjamin"? 10:12:13	14 A. The only assistance I really got was 10:19:05
15 A. The funding was certainly in plastics. 10:12:16	15 with regard to the transition of some of the citations 10:19:08
16 My interest was more in metals. So my graduate 10:12:19	16 from -- I may mess this up -- but documents that were 10:19:11
17 research was funded thanks to plastics, but my real 10:12:22	17 part of the 408, if that's the correct number, the 10:19:17
18 interest was in metals. 10:12:25	18 initial disclosure to documents that have been 10:19:20
19 Q. You've not written any papers regarding 10:12:28	19 remarked. 10:19:23
20 metal failure or metallurgy; is that correct? 10:12:32	20 Q. Okay. So documents that have been 10:19:24
21 A. No, I have not. 10:12:35	21 exchanged, I think, on a confidential basis for 10:19:25
22 Q. In your C.V., you list a number of areas 10:12:36	22 settlement purposes and then reproduced once we got 10:19:28
23 of relevant experience and postgraduate training, 10:12:38	23 into litigation? 10:19:31
24 correct? 10:12:42	24 A. Correct. I think I had cited a lot of 10:19:32
25 A. Correct. 10:12:42	25 those documents, and the goal was to cite to the 10:19:34
Page 30	Page 32
1 Q. Is it fair to say that you have more 10:12:44	1 officially-produced documents, and from that, I got 10:19:37
2 relevant experience and postgraduate training with 10:12:44	2 help from Ms. Zeman. 10:19:43
3 regard to plastics, rubbers, and polymers rather than 10:12:44	3 Q. Is there anything in your report that 10:19:44
4 metals? 10:12:48	4 you have found to be incorrect since it was submitted 10:19:46
5 A. If we're talking about post- 10:12:49	5 that you would like to correct? 10:19:49
6 undergraduate training, I would say probably more, but 10:12:54	6 A. Nothing major, but there is some small 10:19:50
7 not by much. A lot of classes I took were actually in 10:12:56	7 typos that I noticed after reviewing it more recently. 10:19:53
8 mechanical metallurgy and failure analysis of metals. 10:13:00	8 Do you want me just to go through those? 10:19:57
9 I took classes also in polymers but not so much the 10:13:03	9 Q. Sure. 10:19:59
10 organic chemistry of things, more fractography of 10:13:08	10 A. On Page 3, about the sixth line down, 10:20:00
11 polymers. Postgraduate of graduate school, I would 10:13:13	11 where I quoted Dr. Conaghan, and I quoted, "Had 10:20:08
12 say it's a mix of both metals and plastics. I 10:13:16	12 difficulty removing the tank from the lid." It should 10:20:13
13 actually after -- I guess this was shortly after 10:13:20	13 be "lid from the tank," and that's a byproduct of me 10:20:18
14 receiving my Ph.D., did some work for ASM, which is 10:13:25	14 typing my own report. 10:20:23
15 now called The Materials Society -- it used to be 10:13:29	15 On Page 6, for footnote number 25, I 10:20:32
16 primarily a metal society -- where they hired us -- I 10:13:34	16 added Page 148, lines 21 through 24 of Conaghan's 10:20:44
17 proposed to them taking the metals handbooks, which is 10:13:41	17 deposition to that cite. 10:20:50
18 a multivolume set, and transferring them onto CD in a 10:13:44	18 On Page 20, about the ninth line down, 10:20:52
19 manner in which you could search them more efficiently 10:13:48	19 the sentence that starts with, "Given a fill level of 10:21:29
20 and bring up relevant contents. So we had a contract 10:13:51	20 14 inches as documented and a height to volume 10:21:31
21 with them to do that. 10:13:54	21 relationship," I just switched "volume" and "height" 10:21:35
22 MR. SMITH: Okay. Let me just take a 10:13:55	22 for clarity. It really should have read "a volume to 10:21:40
23 quick break and grab the exhibits that are outside 10:13:57	23 height relationship of 10.3." And I had "inches." It 10:21:44
24 here. 10:13:59	24 should be "liters of LN2," not inches of LN2. And at 10:21:40
25 THE VIDEOGRAPHER: The time is 10:13, 10:14:00	25 the bottom of that page for footnote 34, I also 10:21:56
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<p>1 referenced MSO021238, which I think is the original 10:21:59</p> <p>2 document where I found the 10.3 liters per inch. I 10:22:09</p> <p>3 think it's redundant with the CHART 001838 document. 10:22:13</p> <p>4 I think they're two separate documents, but they say 10:22:19</p> <p>5 the same thing. 10:22:24</p> <p>6 On Page 22, Opinion Number 4, I added to 10:22:30</p> <p>7 reference to the one, two -- third line down, where it 10:22:41</p> <p>8 says, "Documents produced by charge state. That loss 10:22:47</p> <p>9 of controller may or may not lead to an unacceptable 10:22:50</p> <p>10 risk," I added reference -- the existing reference 43 10:22:57</p> <p>11 to cite that sentence. 10:23:00</p> <p>12 Q. And you added the space between "may" 10:23:06</p> <p>13 and "or," right? 10:23:08</p> <p>14 A. Where is that? 10:23:11</p> <p>15 Q. It's on the third line. You say, 10:23:12</p> <p>16 "Controller mayor," as in person, as opposed to "may," 10:21:40</p> <p>17 space, "or." 10:21:40</p> <p>18 A. Not on my copy. 10:23:15</p> <p>19 Q. Oh, really? 10:23:16</p> <p>20 MS. ZEMAN: Same here. 10:23:17</p> <p>21 Q. (BY MR. SMITH) Okay. 10:23:20</p> <p>22 A. So now I've got to look back at your 10:23:21</p> <p>23 copy and determine whether it really is inaccurate. 10:23:23</p> <p>24 Q. It looked like there's no space in my 10:23:25</p> <p>25 copy. 10:23:29</p> <p style="text-align: right;">Page 34</p>	<p>1 Q. And is that because the destructive 10:24:50</p> <p>2 testing of Tank 4 has not been completed? 10:24:55</p> <p>3 A. It's because of that, and also because, 10:24:58</p> <p>4 my understanding, discovery is still ongoing, and 10:25:00</p> <p>5 until I've had a chance to read the remainder of the 10:25:03</p> <p>6 discovery documents that might pertain to my areas of 10:25:07</p> <p>7 analysis, I would consider it to be preliminary. 10:25:12</p> <p>8 Q. Pages 7 and 8 of your report lists the 10:25:22</p> <p>9 materials that you reviewed in connection with the 10:25:25</p> <p>10 preparation of your report; is that right? 10:25:27</p> <p>11 A. Correct. 10:25:28</p> <p>12 Q. Did counsel select all of the documents 10:25:29</p> <p>13 and depositions for your review? 10:25:34</p> <p>14 A. Counsel provided them to me, so I would 10:25:38</p> <p>15 say yes. I mean, these are -- this is the information 10:25:40</p> <p>16 I was provided with. 10:25:44</p> <p>17 Q. Did you search for any documents on your 10:25:45</p> <p>18 own in connection with the preparation of your report? 10:25:48</p> <p>19 A. I looked at Chart's website. I looked 10:25:51</p> <p>20 at the recall that Chart had issued. I think prior to 10:25:58</p> <p>21 it being provided in the documents, I had found it 10:26:04</p> <p>22 online at some point. Maybe some catalogs. Just 10:26:06</p> <p>23 information generally related to Chart tanks is the 10:26:13</p> <p>24 main thing I may have sought out on my own. 10:26:16</p> <p>25 Q. Did you look at PFC's website? 10:26:18</p> <p style="text-align: right;">Page 36</p>
<p>1 A. The one you provided to me is fine. 10:23:36</p> <p>2 Q. I don't know if you can see that. I put 10:23:43</p> <p>3 a slash through it because it was so close together. 10:23:45</p> <p>4 MS. ZEMAN: Weird. 10:23:47</p> <p>5 A. That's weird. Maybe it's the way the 10:23:48</p> <p>6 PDF printed out. 10:23:52</p> <p>7 There should be a space between "may" 10:23:58</p> <p>8 and "or," and it looks to be that way on the copy you 10:24:01</p> <p>9 provided me as well as the copy I brought with me, so 10:24:05</p> <p>10 I don't know what's happening there. 10:24:08</p> <p>11 Item 5, I added the word "or" on the 10:24:09</p> <p>12 front -- I'm sorry, on the first line, where it says 10:24:14</p> <p>13 "fabricated and instrumented." I said "fabricated 10:24:17</p> <p>14 and/or instrumented." I think that's the only, you 10:24:25</p> <p>15 know, small typos I've seen. 10:24:29</p> <p>16 Q. (BY MR. SMITH) Are all of the opinions 10:24:32</p> <p>17 that you've generated to date in this case contained 10:24:33</p> <p>18 within this report? 10:24:35</p> <p>19 A. I believe so. 10:24:39</p> <p>20 Q. Is it correct that your opinions are 10:24:40</p> <p>21 preliminary in nature? 10:24:44</p> <p>22 A. Yes. 10:24:45</p> <p>23 Q. Is it possible that your opinions will 10:24:45</p> <p>24 need to be revised or changed? 10:24:48</p> <p>25 A. It is. 10:24:50</p> <p style="text-align: right;">Page 35</p>	<p>1 A. I think I did at one point, yes. 10:26:21</p> <p>2 Q. Did you review any scientific literature 10:26:23</p> <p>3 in connection with the preparation of your report? 10:26:25</p> <p>4 A. I may have read a little bit about 10:26:33</p> <p>5 fertility clinics, mainly just for my personal 10:26:36</p> <p>6 edification to become more comfortable with the 10:26:40</p> <p>7 subject matter, but nothing that I think that really 10:26:43</p> <p>8 was relevant to my analysis of this. 10:26:46</p> <p>9 Q. Did you conduct any interviews of anyone 10:26:48</p> <p>10 regarding cryogenic tanks? 10:26:50</p> <p>11 A. No. 10:26:53</p> <p>12 Q. Did you perform any independent testing 10:26:53</p> <p>13 other than that that was conducted under the 10:27:03</p> <p>14 agreed-upon protocol for purposes of a failure 10:27:06</p> <p>15 analysis of Tank 4? 10:27:10</p> <p>16 A. No, only what was done at Menlo Park at 10:27:11</p> <p>17 Exponent's facility. 10:27:16</p> <p>18 Q. Do you have any plans to conduct any 10:27:18</p> <p>19 independent testing? 10:27:21</p> <p>20 A. Possibly, yes. 10:27:22</p> <p>21 Q. And what are the possible -- strike 10:27:23</p> <p>22 that. What is the possible testing that you have in 10:27:24</p> <p>23 mind? 10:27:26</p> <p>24 A. I've discussed with counsel -- 10:27:27</p> <p>25 MS. ZEMAN: I warn the witness not to 10:27:30</p> <p style="text-align: right;">Page 37</p>



1 inches. 10:33:30	1 MR. TARANTINO: For whom? 10:36:32
2 Q. And so you don't know at present what 10:33:37	2 THE DEPONENT: Conaghan. 10:36:34
3 the volume of space is that was taken up by the 10:33:42	3 MR. TARANTINO: Doctor. 10:36:37
4 cannisters or the racks as well as the samples; is 10:33:46	4 Q. (BY MR. SMITH) So in your opinion, 10:36:38
5 that right? 10:33:49	5 Dr. Kasbekar, is 1 inch of liquid nitrogen an unsafe 10:36:41
6 A. I do not. I would point out that I did 10:33:49	6 level? 10:36:44
7 request exemplar components to be present at the last 10:34:02	7 A. You're going outside of my direct area 10:36:45
8 inspection, but for whatever reason, that did not 10:34:06	8 of expertise, but I would say given that the intention 10:36:50
9 happen. 10:34:10	9 is to keep the racks covered, it would seem to be an 10:36:56
10 Q. What type of exemplar components? 10:34:10	10 unsafe level, but again in terms of what level of 10:37:00
11 A. The racks or something similar to what 10:34:15	11 cooling beyond what I've read in other experts' 10:37:04
12 was in Tank Number 4 at the time of failure. 10:34:19	12 reports, without -- if you take the number of 150 C as 10:37:06
13 Q. You visited and photographed the PFC 10:34:22	13 you get warmer than that, or negative 150 C, that 10:37:11
14 laboratory in San Francisco in September of 2018, 10:34:25	14 there's an issue, I would have to look at what 1 inch 10:37:16
15 right? 10:34:28	15 would do and where the exact tissue was located. So 10:37:19
16 A. I did. 10:34:28	16 this is more intended to characterize what I gleaned 10:37:22
17 Q. And in the second sentence of your 10:34:28	17 from the deposition testimony and conversations with 10:37:26
18 report -- 10:34:30	18 other experts. 10:37:29
19 A. What page are you on? 10:34:31	19 Q. Okay. So your writing that the liquid 10:37:30
20 Q. It's on Page 2. In the second sentence 10:34:32	20 level -- strike that. So your writing in this report 10:37:34
21 of your report in the Background section on Page 2 10:34:48	21 that the level of liquid nitrogen reaching below a 10:37:37
22 reads, quote, "The PFC laboratory is operated by 10:34:51	22 safe level is based upon your understanding from other 10:37:40
23 Prelude Fertility, Inc. and its subsidiary Pacific MSO 10:34:55	23 documents? 10:37:42
24 LLC." Do you see that? 10:34:57	24 A. Yes, and it's also based upon my 10:37:45
25 A. I do. 10:34:59	25 understanding that the desired level was in the 10 to 10:37:47
Page 42	Page 44
1 Q. And is it your understanding that 10:35:00	1 11-inch range and that you're well below it. So if 10:37:49
2 Prelude Fertility and its subsidiary, Pacific MSO, 10:35:02	2 that's the range that is deemed reasonably safe for 10:37:54
3 LLC, operated the laboratory at all relevant times? 10:35:08	3 the storage of those contents and you're at 10 percent 10:37:58
4 A. That's my general understanding. I'm 10:35:20	4 or less of that level, I would consider that to be 10:38:01
5 not sure what you consider to be all relevant times, 10:35:22	5 unsafe, but in terms of the effect on the tissue, I 10:38:05
6 but that was my understanding from what was expressed 10:35:24	6 would leave that to somebody else to render an opinion 10:38:10
7 to me from counsel as well as reading some of the 10:35:26	7 on. 10:38:12
8 documents, but, again, it is put in there for 10:35:28	8 Q. Is it your assumption that if the liquid 10:38:12
9 informational purposes. I don't know that it's 10:35:31	9 level reaches 1 inch or below that the eggs and 10:38:16
10 something that I relied upon for my engineering 10:35:33	10 embryos within the tank would be exposed to unsafe 10:38:21
11 opinions. 10:35:35	11 temperatures? 10:38:24
12 Q. On the top of Page 3, you write that on 10:35:35	12 MS. ZEMAN: Objection, outside his area 10:38:25
13 March 4th of 2018, the level of liquid nitrogen in 10:35:49	13 of expertise. 10:38:27
14 Tank 4, quote, had been below a safe level for an 10:35:55	14 A. I don't know that it's an assumption. 10:38:30
15 undetermined period, end quote. Do you see that? 10:36:01	15 My understanding is that the samples contained within 10:38:32
16 A. Yes. 10:36:03	16 this tank have yielded below normal results, and that 10:38:36
17 Q. And you go on in this paragraph to 10:36:04	17 more likely than not is due to result of this 10:38:45
18 indicate that according to Dr. Conaghan -- or 10:36:06	18 incident. So assuming that that is accurate, then 10:38:48
19 Mr. Conaghan, the liquid nitrogen level was found to 10:36:10	19 that would imply that the level that it was found out 10:38:55
20 be approximately 1 inch; is that right? 10:36:14	20 would have been an unsafe level for protecting the 10:38:57
21 A. I think that -- well, that was the 10:36:19	21 contents. That's essentially the essence of my 10:39:00
22 measurement of the dip stick that they ultimately 10:36:21	22 analysis and opinion in that regard. 10:39:03
23 took, so that was the level when they took that 10:36:24	23 Q. (BY MR. SMITH) Okay. So your 10:39:05
24 measurement. Is it doctor or mister? 10:36:27	24 understanding is that to the extent outcomes of 10:39:06
25 Q. I don't know. 10:36:30	25 samples that were in Tank 4 at the time of the 10:39:10
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<p>1 incident are below normal, that is a reflection of the 10:39:14</p> <p>2 fact that the liquid level -- the liquid nitrogen 10:39:18</p> <p>3 level in Tank 4 reached an unsafe level; is that 10:39:22</p> <p>4 right? 10:39:25</p> <p>5 A. Yeah. Maybe I can make it even simpler. 10:39:25</p> <p>6 Q. Yes. 10:39:28</p> <p>7 A. If, in fact, the issue that was stored 10:39:28</p> <p>8 in that tank was damaged as a result of this incident, 10:39:34</p> <p>9 that the level that the tank was in when it was found 10:39:36</p> <p>10 would have been an unsafe level. I mean, I think 10:39:40</p> <p>11 that's commonsense logic. If for some reason it's 10:39:43</p> <p>12 established that the tissue was the way it would have 10:39:47</p> <p>13 been had nothing happened, then, obviously, that can 10:39:51</p> <p>14 be re-evaluated. 10:39:54</p> <p>15 Q. Okay. You write on Page 4 at the very 10:39:54</p> <p>16 top, quote, "As a result of the failure of the subject 10:40:03</p> <p>17 tank, stored eggs and embryos were more likely than 10:40:07</p> <p>18 not exposed to elevated temperatures." Do you see 10:40:13</p> <p>19 that? 10:40:16</p> <p>20 A. Yes. 10:40:16</p> <p>21 Q. And that's your opinion, right? 10:40:16</p> <p>22 A. It's my opinion based upon the materials 10:40:18</p> <p>23 that I reviewed and my understanding of the 10:40:20</p> <p>24 characteristics of the tank. 10:40:24</p> <p>25 Q. And do you have any estimate as to how 10:40:25</p> <p style="text-align: right;">Page 46</p>	<p>1 Q. Do different temperatures exist within a 10:41:41</p> <p>2 cryogenic storage tank? 10:41:47</p> <p>3 A. Yes. 10:41:47</p> <p>4 Q. And is there a degradation -- is there a 10:41:47</p> <p>5 gradation of temperatures within the tank? 10:41:50</p> <p>6 A. A gradation? 10:41:53</p> <p>7 Q. Yes. 10:41:55</p> <p>8 A. Yes. 10:41:56</p> <p>9 Q. And what is that gradation? 10:41:56</p> <p>10 A. I don't know for that -- it would vary 10:41:58</p> <p>11 from tank to tank, and perhaps it would vary along 10:42:00</p> <p>12 with the operation of the tank, the ambient 10:42:03</p> <p>13 temperature of the room. I don't know a hard answer 10:42:07</p> <p>14 to that, but what I will tell you is it goes from the 10:42:09</p> <p>15 temperature of the liquid nitrogen itself up to 10:42:12</p> <p>16 whatever the warmest temperature might be closer to 10:42:16</p> <p>17 the lid, where there's going to be vapor. 10:42:19</p> <p>18 Q. And so the temperature of liquid 10:42:20</p> <p>19 nitrogen is minus 196 degrees Celsius, right? 10:42:23</p> <p>20 A. Correct. 10:42:27</p> <p>21 Q. And if you're -- at the bottom of the 10:42:27</p> <p>22 tank, there's liquid nitrogen, and that would be the 10:42:30</p> <p>23 temperature there; is that right? 10:42:32</p> <p>24 A. Correct. 10:42:36</p> <p>25 Q. And then at the top, is it true that the 10:42:37</p> <p style="text-align: right;">Page 48</p>
<p>1 warm the temperatures got within the tank? 10:40:28</p> <p>2 A. No. 10:40:30</p> <p>3 Q. You mentioned the 150 degrees a moment 10:40:31</p> <p>4 ago. Why did you mention that number? 10:40:34</p> <p>5 A. In some of the materials that were filed 10:40:37</p> <p>6 with the class certification brief, other expert 10:40:40</p> <p>7 reports, I think, primarily from Plaintiff's expert 10:40:46</p> <p>8 Christin -- and I'm sorry. I'm blocking her last 10:40:51</p> <p>9 name. 10:40:54</p> <p>10 MS. ZEMAN: Allen. 10:40:54</p> <p>11 THE DEPONENT: What is it? 10:40:55</p> <p>12 MS. ZEMAN: Allen. 10:40:56</p> <p>13 A. Christin Allen, I think there was -- 10:40:58</p> <p>14 reference to the temperature range in the neighborhood 10:41:00</p> <p>15 of 150 is kind of based on memory as a -- there was a 10:41:03</p> <p>16 window she provided. So before I go on the record and 10:41:08</p> <p>17 say 150 C is some critical number, I'm just trying to 10:41:11</p> <p>18 give you an approximation based upon the review of her 10:41:12</p> <p>19 report. It really is outside of my area of expertise. 10:41:14</p> <p>20 Q. (BY MR. SMITH) Why in your opinion is 10:41:21</p> <p>21 exposure to elevated temperatures important? 10:41:23</p> <p>22 A. Because the whole purpose of the Chart 10:41:26</p> <p>23 tank at issue here is to maintain liquid nitrogen 10:41:30</p> <p>24 temperatures in order to safely store the embryos and 10:41:33</p> <p>25 other materials that were in that tank. 10:41:37</p> <p style="text-align: right;">Page 47</p>	<p>1 greatest amount of heat transfer occurs through the 10:42:38</p> <p>2 lid of the tank because there's no vacuum insulation 10:42:41</p> <p>3 there? 10:42:44</p> <p>4 MS. ZEMAN: Objection to form. 10:42:45</p> <p>5 A. That would be my expectation. You have 10:42:46</p> <p>6 a very thick layer of Styrofoam, but then you also 10:42:48</p> <p>7 have an unsealed perimeter, so I would expect along 10:42:51</p> <p>8 that perimeter would be where the warmest temperatures 10:42:56</p> <p>9 would be. 10:42:59</p> <p>10 Q. (BY MR. SMITH) And do you have an 10:42:59</p> <p>11 understanding as to what the temperatures are in a 10:43:00</p> <p>12 normal operating cryogenic tank at the top? 10:43:09</p> <p>13 A. I may have read something along the way 10:43:12</p> <p>14 in the documents, but no, I don't know exactly what 10:43:14</p> <p>15 that temperature is. Again, I would say it would 10:43:16</p> <p>16 depend on the ambient conditions in the room also and 10:43:18</p> <p>17 when the top was last replaced and probably, to some 10:43:21</p> <p>18 extent, on the level of nitrogen in the tank also. 10:43:27</p> <p>19 Q. But it's fair to say that the 10:43:31</p> <p>20 temperatures at the bottom of the tank are typically 10:43:32</p> <p>21 colder than the temperatures at the top of the tank? 10:43:35</p> <p>22 A. I would agree with that, absent some 10:43:37</p> <p>23 unusual circumstances. 10:43:39</p> <p>24 Q. And is it because of temperature 10:43:40</p> <p>25 differentials within a tank that Chart recommends 10:43:43</p> <p style="text-align: right;">Page 49</p>

1 placing thermocouples at two locations within the 10:43:46	1 expansion/contraction is going to affect parts of the 10:46:29
2 tank? 10:43:51	2 tank. 10:46:33
3 A. That's my understanding. 10:43:51	3 Q. And how does it affect parts of the 10:46:33
4 Q. And is it your understanding that 10:43:52	4 tank, generally? 10:46:36
5 thermocouples are supposed to be located, one, at the 10:43:54	5 A. Well, in metals, when you heat a metal, 10:46:36
6 bottom of the tank and, then, two, at the top of the 10:43:57	6 it tends to expand, and when you cool a metal, it 10:46:39
7 boxes or within the samples of the tank? 10:44:02	7 tends to contract. If you've got different metals, 10:46:43
8 A. That's my understanding. I'm not sure 10:44:05	8 they have different coefficients of thermal expansion 10:46:46
9 if they're thermocouples or RTDs, but either way, 10:44:07	9 and contraction, and even if they don't, based upon 10:46:50
10 temperature measurement probes. 10:44:12	10 geometry, you can generate stresses from temperature 10:46:55
11 Q. Do you agree if only 1 inch of liquid 10:44:16	11 changes. 10:46:58
12 nitrogen existed within Tank 4 as of March 4th of 10:44:21	12 Q. Do you know whether or not temperature 10:46:58
13 2018, the eggs and embryos closer to the top of the 10:44:25	13 cycling can have an effect on the gettering system of 10:47:03
14 tank would be exposed to higher temperatures than the 10:44:29	14 a cryogenic tank? 10:47:08
15 eggs and embryos near the bottom? 10:44:33	15 A. I would expect that it could because 10:47:15
16 A. I think the answer is yes, but I didn't 10:44:36	16 depending on -- lower temperatures are going to tend 10:47:18
17 hear the very first of your question. You said if? 10:44:40	17 to result in gases condensing. Higher temperatures 10:47:21
18 Q. Do you agree that if there was only 1 10:44:43	18 are going to have the effect of anything that can 10:47:26
19 inch of liquid nitrogen at the bottom of Tank 4 as of 10:44:43	19 outgas, outgassing and taking up some of the 10:47:30
20 March 4th, 2018, that the eggs and embryos near the 10:44:46	20 capability of the gettering system. 10:47:38
21 top of the tank would be exposed to higher 10:44:50	21 Q. What is your understanding of what the 10:47:43
22 temperatures than the eggs and embryos near the bottom 10:44:53	22 gettering system is within a Chart tank? 10:47:44
23 of the tank? 10:44:57	23 A. It's a -- I don't know what the exact 10:47:48
24 A. I think in principle, yes, but not 10:44:59	24 material that is used is in the Chart tank, but the 10:47:51
25 knowing the spacing between those, I have no idea 10:45:02	25 purpose of it is to absorb any contaminants, gases 10:47:54
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1 whether that's a significant difference at all. I 10:45:04	1 that may form within the vacuum space to keep those 10:48:00
2 mean, if they're close together, it may be a couple 10:45:07	2 gases from expanding and destroying the vacuum. And I 10:48:04
3 degrees. If they're farther apart, it could be more, 10:45:10	3 actually have experience with that from some of the 10:48:09
4 but I really, beyond the commonsense part of it . . . 10:45:13	4 research I did as an undergrad and graduate from some 10:48:12
5 Q. Do you know whether or not Chart 10:45:19	5 of the systems I built. You know, it's difficult to 10:48:16
6 recommends that the maximum temperature for biological 10:45:21	6 maintain a high vacuum. And if you suck a vacuum on 10:48:17
7 samples be minus 150 degrees Celsius? 10:45:24	7 something and say there's some contaminant, maybe some 10:48:21
8 A. I don't know. 10:45:28	8 oil from the machining process that's within the 10:48:24
9 Q. Can elevated temperatures within a 10:45:28	9 vacuum space, as you suck the vacuum, that oil is 10:48:26
10 cryogenic tank cause stress to the tank itself? 10:45:35	10 going to turn to vapor, take up more volume. So 10:48:30
11 A. It's possible, yes. 10:45:41	11 anything that has potential to outgas as solid with 10:48:31
12 Q. If there was a sequence of warming and 10:45:42	12 something that's got a lower boiling point within it, 10:48:38
13 cooling events in a cryogenic tank, would that cause 10:45:46	13 it may outgas. If you can somehow gather or get that 10:48:40
14 stress to the tank? 10:45:51	14 contaminant, then that will help to preserve a lower 10:48:45
15 A. So you asked me earlier about my 10:45:52	15 vacuum. 10:48:50
16 expertise in thermal expansion/contraction which 10:45:55	16 Q. Is a gettering system sometimes called a 10:48:51
17 applies to cryogenic tanks, is exactly relevant to 10:45:59	17 molecular sieve? 10:48:55
18 your question. So the answer is if you've got 10:46:05	18 A. I've heard that term before, yes. 10:48:56
19 temperature cycling of any sort, then that cycling is 10:46:05	19 Q. And is that because it absorbs 10:48:57
20 going to result in additional stresses on parts of the 10:46:08	20 molecules? 10:49:00
21 tank. It's foreseeable stress that can be and should 10:46:11	21 A. Yes. So the molecule itself will either 10:49:01
22 be accounted for in the design and fabrication of the 10:46:17	22 absorb or perhaps even bond with something in the 10:49:03
23 tank, but yes, if you have a tank that is in a 10:46:19	23 gettering agent. 10:49:06
24 complete steady-state condition versus a tank where 10:46:21	24 Q. [REDACTED]
25 there's a variation in temperature, then the thermal 10:46:25	[REDACTED]
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<p>16 Q. Do you have any opinion as to what a 10:50:12</p> <p>17 safe level of liquid nitrogen is in an MVE 808 10:50:21</p> <p>18 cryogenic tank? 10:50:30</p> <p>19 A. My only opinion would be dependent on 10:50:31</p> <p>20 the contents of the tank and the manner of storage and 10:50:33</p> <p>21 the requirements to maintain the integrity of the 10:50:36</p> <p>22 contents of the tank. 10:50:38</p> <p>23 Q. Is -- 10:50:39</p> <p>24 A. I don't think that question can be 10:50:41</p> <p>25 answered. That's too general. 10:50:42</p> <p style="text-align: right;">Page 54</p>	<p>1 of liquid nitrogen with respect to Tank 4 would be 10:52:10</p> <p>2 some level above and beyond what would cover the 10:52:15</p> <p>3 samples within the tank? 10:52:18</p> <p>4 A. That's correct. 10:52:25</p> <p>5 Q. You indicated you read and reread the 10:52:26</p> <p>6 deposition of Dr. Joe Conaghan, right? 10:52:29</p> <p>7 A. Correct. 10:52:33</p> <p>8 Q. And he testified in his deposition that 10:52:33</p> <p>9 11-inch cannisters were used to store tissue in, 10:52:36</p> <p>10 right? 10:52:39</p> <p>11 A. That's my understanding. 10:52:40</p> <p>12 Q. Do you know how samples are stored 10:52:41</p> <p>13 within the cannisters? 10:52:43</p> <p>14 A. I don't have a complete-enough 10:52:44</p> <p>15 understanding at this point to tell you at what level 10:52:45</p> <p>16 the biological tissue exists in. 10:52:49</p> <p>17 Q. I -- go ahead. 10:52:55</p> <p>18 A. I have a general understanding that 10:52:56</p> <p>19 they're in straws that I think are in canes that are 10:52:57</p> <p>20 in the box, but beyond that general understanding, I 10:53:01</p> <p>21 don't know. 10:53:05</p> <p>22 Q. And what's your understanding of the 10:53:05</p> <p>23 straws within the canes within the box, if you have 10:53:08</p> <p>24 one? 10:53:11</p> <p>25 A. I think I've really given you the limit. 10:53:11</p> <p style="text-align: right;">Page 56</p>
<p>1 Q. Assuming the contents of Tank 4 were a 10:50:44</p> <p>2 series of cannisters that were 11 inches tall, do you 10:50:48</p> <p>3 have an opinion as to what a safe level of liquid 10:50:52</p> <p>4 nitrogen would be within that tank? 10:50:55</p> <p>5 A. Well, I think the minimum required level 10:50:57</p> <p>6 would be, from what I understand -- and you're getting 10:51:02</p> <p>7 outside of my area of expertise into the 10:51:05</p> <p>8 embryologist's area of expertise -- would be to 10:51:09</p> <p>9 submerge the contents in liquid nitrogen. That's my 10:51:12</p> <p>10 understanding from this case. Now, I wouldn't call 10:51:15</p> <p>11 that minimum level a safe level because you need to 10:51:17</p> <p>12 have an additional buffer to account for consumption 10:51:20</p> <p>13 of the nitrogen due to the inefficiency of the tank to 10:51:25</p> <p>14 be a sufficient insulator, due to the foreseeable use 10:51:32</p> <p>15 of the tank lid and you're going to lose nitrogen, so 10:51:36</p> <p>16 there would be some buffer in there. 10:51:39</p> <p>17 My understanding is that PFC considered 10:51:41</p> <p>18 that level at the end of the day to be 2 to 3 inches 10:51:45</p> <p>19 above the top of the tanks. 10:51:49</p> <p>20 Q. You understand that the Tank 4 Chart 10:51:52</p> <p>21 tank was a tank that was designed to submerge samples 10:51:58</p> <p>22 in liquid nitrogen as opposed to have samples exist in 10:52:03</p> <p>23 vapor, right? 10:52:06</p> <p>24 A. That's my understanding. 10:52:07</p> <p>25 Q. So is it your opinion that a safe level 10:52:08</p> <p style="text-align: right;">Page 55</p>	<p>1 I don't know how high up the tissue goes. Again, that 10:53:15</p> <p>2 was one of the reasons I wanted to see for that 10:53:18</p> <p>3 particular tank what exactly was in there or what -- 10:53:20</p> <p>4 something similar to what was in there so I could get 10:53:27</p> <p>5 a better understanding of it for that particular 10:53:29</p> <p>6 setup. 10:53:32</p> <p>7 Q. Is it your understanding that different 10:53:33</p> <p>8 stacks of samples may be higher than other stacks of 10:53:35</p> <p>9 samples within a tank? 10:53:39</p> <p>10 A. That's my general understanding. 10:53:40</p> <p>11 Q. And what's that based upon? 10:53:42</p> <p>12 A. Conversations, I think, with Christin 10:53:44</p> <p>13 Allen early on in the case, looking at some of the 10:53:48</p> <p>14 rack designs for various tanks online, that type of 10:53:56</p> <p>15 thing. 10:53:59</p> <p>16 Q. And you mentioned conversations with 10:53:59</p> <p>17 Christin Allen. Were those in connection with our 10:54:02</p> <p>18 visits to the multiple facilities or were those 10:54:08</p> <p>19 separate? 10:54:11</p> <p>20 A. It was in connection with the visit to 10:54:11</p> <p>21 PFC primarily. 10:54:13</p> <p>22 Q. And do you recall what she said about 10:54:14</p> <p>23 the stacking of samples within cannisters? 10:54:16</p> <p>24 A. I think she was generally explaining it 10:54:19</p> <p>25 to counsel, and I was nearby, but it was more with 10:54:21</p> <p style="text-align: right;">Page 57</p>

[illegible]

<p>1 [REDACTED]</p> <p>2 [REDACTED]</p> <p>3 [REDACTED]</p> <p>4 [REDACTED]</p> <p>5 [REDACTED]</p> <p>6 [REDACTED]</p> <p>7 [REDACTED]</p> <p>8 [REDACTED]</p> <p>9 [REDACTED]</p> <p>10 [REDACTED]</p> <p>11 [REDACTED]</p> <p>12 [REDACTED]</p> <p>13 [REDACTED]</p> <p>14 [REDACTED]</p> <p>15 Q. And you just said if you emptied a 11:01:02</p> <p>16 storage tank, you would have frost. 11:01:07</p> <p>17 A. Yes. 11:01:10</p> <p>18 Q. Can you explain what you mean by that? 11:01:10</p> <p>19 A. When you have expansion of gas, you have 11:01:12</p> <p>20 a cooling effect. So when I used to fill dewars up, 11:01:15</p> <p>21 and you open up and the gas is flowing out, you're 11:01:19</p> <p>22 generally going to cause cooling to the outer tank, 11:01:22</p> <p>23 and then the humidity in the room will condense on 11:01:26</p> <p>24 that cold surface relatively quickly and form frost. 11:01:29</p> <p>25 Q. The existence of ice on the outside of a 11:01:33</p> <p style="text-align: right;">Page 62</p>	<p>1 certainly not from the testimony evidence prior to 11:02:42</p> <p>2 this event that that was the case, and then there's a 11:02:45</p> <p>3 20-some-hour period where nobody is observing the 11:02:49</p> <p>4 tank. So we don't know the answer to that. And then 11:02:53</p> <p>5 there's the period where they get to it, and my 11:02:57</p> <p>6 understanding of the testimony -- of Dr. Conaghan's 11:02:59</p> <p>7 testimony is that there was no visible ice buildup, 11:03:03</p> <p>8 but he makes a point of he did not look underneath the 11:03:08</p> <p>9 tank where I would expect the initial frost to build 11:03:12</p> <p>10 up. 11:03:15</p> <p>11 Q. Why would you expect the frost to build 11:03:19</p> <p>12 up at the bottom of the tank at first? 11:03:22</p> <p>13 A. Because based on what we found thus far, 11:03:23</p> <p>14 the only positive leak site that we've identified is 11:03:34</p> <p>15 in the annular weld at the bottom of the tank, and 11:03:38</p> <p>16 that's literally, you know, right at the false 11:03:43</p> <p>17 level -- close to the level of the false bottom, give 11:03:46</p> <p>18 or take a centimeter or so. That crack would have 11:03:48</p> <p>19 allowed nitrogen to enter into the vacuum space, 11:03:54</p> <p>20 liquid nitrogen, which is heavier than air. Would 11:03:58</p> <p>21 have migrated to the lowest point, which would have 11:04:04</p> <p>22 been the bottom, until it got to the point where it 11:04:06</p> <p>23 filled at least to the level of the crack, you know, 11:04:10</p> <p>24 if there was sufficient nitrogen in the tank to do 11:04:13</p> <p>25 that at the time. So therefore, you've got liquid 11:04:17</p> <p style="text-align: right;">Page 64</p>
<p>1 tank would indicate a failure of the vacuum in the 11:01:37</p> <p>2 tank, right? 11:01:39</p> <p>3 A. Say that one more time. I was looking 11:01:42</p> <p>4 at my report. 11:01:44</p> <p>5 Q. Yes. The existence of ice on the 11:01:46</p> <p>6 outside of a tank would indicate a failure of the 11:01:48</p> <p>7 vacuum in the tank, right? 11:01:52</p> <p>8 A. It certainly could, yes. Are we talking 11:01:54</p> <p>9 about -- so tanks are generally sealed. Dewars are 11:01:58</p> <p>10 generally more -- they're open to atmospheric 11:02:02</p> <p>11 pressure, even with the lid on, really, unless 11:02:06</p> <p>12 something has gone wrong, the internal part is not -- 11:02:08</p> <p>13 so, yes, in a dewar, that would be the case. 11:02:14</p> <p>14 Q. And Tank 4 is a dewar? 11:02:17</p> <p>15 A. Tank 4 is absolutely a dewar. 11:02:19</p> <p>16 Q. So would you expect if there was a 11:02:21</p> <p>17 vacuum failure in Tank 4 that the outside of the 11:02:24</p> <p>18 vacuum would be covered in ice? 11:02:27</p> <p>19 A. Eventually, yes. After some period of 11:02:28</p> <p>20 time, yes, not necessarily the instant that the vacuum 11:02:30</p> <p>21 fails. 11:02:32</p> <p>22 Q. And to your knowledge, is there any 11:02:34</p> <p>23 evidence that indicates that Tank 4 was at any time 11:02:35</p> <p>24 covered in ice? 11:02:39</p> <p>25 A. I don't know that there's -- there's 11:02:40</p> <p style="text-align: right;">Page 63</p>	<p>1 nitrogen at 196 in direct contact with the stainless 11:04:21</p> <p>2 steel bottom of the tank. Stainless isn't an ideal 11:04:25</p> <p>3 conductor, but it's still a much better conductor than 11:04:28</p> <p>4 air or vacuum space. You're going to have a very cold 11:04:31</p> <p>5 bottom of that tank within, you know, probably 11:04:35</p> <p>6 seconds, and any humidity in the air is going to tend 11:04:38</p> <p>7 to condense out on that cold surface, so the surface 11:04:41</p> <p>8 is going to be, you know, close to the temperature of 11:04:44</p> <p>9 the liquid nitrogen, you know, warmer, but certainly 11:04:47</p> <p>10 below freezing. It's going to develop frost at that 11:04:50</p> <p>11 point until the nitrogen is consumed and it starts to 11:04:53</p> <p>12 warm and that frost melts and drips down onto the 11:04:56</p> <p>13 floor. 11:05:00</p> <p>14 Q. Wouldn't you expect that if 20 to 30 11:05:03</p> <p>15 liters of liquid nitrogen entered the interstitial 11:05:06</p> <p>16 space that there would be a thick layer of ice near 11:05:13</p> <p>17 the bottom of Tank 4? 11:05:19</p> <p>18 A. Depending on when that happens, yes. I 11:05:22</p> <p>19 mean, if -- so let's say that this happened 20 hours 11:05:27</p> <p>20 ago. That layer of ice may have melted over time. If 11:05:31</p> <p>21 it happened 10 seconds ago or 2 minutes ago, no, I 11:05:38</p> <p>22 wouldn't necessarily expect it all to condense out and 11:05:43</p> <p>23 freeze and to form a thick layer of ice. But 11:05:45</p> <p>24 regardless, I don't know how visible -- if it's on the 11:05:49</p> <p>25 bottom of the tank, you know, I don't think we're 11:05:52</p> <p style="text-align: right;">Page 65</p>

[illegible]

1 allowed to permeate the entire interstitial space, 11:07:08  
2 wouldn't you expect to see condensation or frost 11:07:12  
3 around the entire tank? 11:07:15  
4 A. Eventually, yes, but that vapor is 11:07:16  
5 competing with the ambient room temperature, which is 11:07:19  
6 warming the outside. So what I would expect and kind 11:07:23  
7 of my experience handling liquid nitrogen is the lower 11:07:27  
8 part of the tank would be the coldest, you would see 11:07:31  
9 frost develop there first, and as the liquid nitrogen 11:07:34  
10 cooled that metal to a sufficient temperature, you 11:07:40  
11 would start to see frost develop higher and higher up 11:07:43  
12 with time. And then as time went on and the nitrogen 11:07:46  
13 depleted, you would tend to see that frost line come 11:07:51  
14 down and melt and drip onto the floor. 11:07:53  
15 Q. I think it's your opinion that the tank 11:07:56  
16 floor failure was catastrophic and sudden at some 11:08:01  
17 point between 7:30 a.m. and 12:20 p.m. on March 4th; 11:08:07  
18 is that right? 11:08:15  
19 A. I would probably broaden it a little bit 11:08:15  
20 more. I would say there was a catastrophic failure 11:08:19  
21 that likely occurred between the time that the staff 11:08:22  
22 left on Saturday and shortly prior to the point that 11:08:26  
23 the issue was discovered with Tank 4. 11:08:32  
24 Q. [REDACTED]

[illegible]

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<p>1 that was on Page 2 is at the top of Page 3. So 11:11:22</p> <p>2 somehow likely -- I'm going to guess during the 11:11:27</p> <p>3 printing process, something with spacing. It's an 11:11:32</p> <p>4 Adobe issue probably. 11:11:37</p> <p>5 Q. Just so we're clear, you're saying in 11:11:39</p> <p>6 your copy of the report your figure 1 caption is at 11:11:43</p> <p>7 the bottom of Page 2? 11:11:45</p> <p>8 A. Let me check. Yep. It's at the bottom 11:11:47</p> <p>9 of Page 2 right underneath of the figure. 11:11:57</p> <p>10 Q. And in the Exhibit 1 that I've given 11:11:59</p> <p>11 you, the caption is at the top of Page 3? 11:12:02</p> <p>12 A. Maybe we can actually even get the -- if 11:12:04</p> <p>13 you want, have the camera zoom in on the two. 11:12:06</p> <p>14 MS. ZEMAN: I think you're on different 11:12:10</p> <p>15 pages. 11:12:11</p> <p>16 A. I'm sorry. 11:12:12</p> <p>17 MS. ZEMAN: This is Figure 1, right? 11:12:13</p> <p>18 A. I'm sorry. This is a figure caption 11:12:15</p> <p>19 that appears in your copy, in defense counsel's copy 11:12:19</p> <p>20 of the report. So it's there. Appears at the top of 11:12:23</p> <p>21 Page 2 for some reason. And then it's missing from 11:12:27</p> <p>22 the figure at the bottom and the spacing is different, 11:12:37</p> <p>23 which I take exception to because it's very difficult 11:12:42</p> <p>24 to get those figure captions to be accurate. So now 11:12:45</p> <p>25 you've undone it, but beyond that, I'm not disputing 11:12:48</p> <p style="text-align: right;">Page 70</p>	<p>1 Q. You may not know this. What's the 11:14:13</p> <p>2 thickness of the stainless steel at the bottom of the 11:14:17</p> <p>3 tank? 11:14:21</p> <p>4 A. I don't know it off the top of my head. 11:14:21</p> <p>5 I'd have to look at your drawings. 11:14:23</p> <p>6 Q. Assuming we just poured liquid nitrogen 11:14:25</p> <p>7 on the top of a stainless steel plate at the same 11:14:28</p> <p>8 thickness as the bottom of the Chart tank, how long 11:14:32</p> <p>9 would it take for frost or condensation to develop on 11:14:33</p> <p>10 the bottom of that plate? 11:14:35</p> <p>11 A. I think it would be fairly quickly, 11:14:36</p> <p>12 within minutes, maybe a little quicker than that 11:14:39</p> <p>13 depending on -- in North Carolina during the summer, 11:14:39</p> <p>14 it could be seconds. 11:14:42</p> <p>15 MR. SMITH: All right. We can take a 11:14:43</p> <p>16 break. 11:14:44</p> <p>17 MS. ZEMAN: Thank you. 11:14:45</p> <p>18 THE VIDEOGRAPHER: The time is 11:14, 11:14:46</p> <p>19 and we are off the record. 11:14:48</p> <p>20 (Recess taken.) 11:14:54</p> <p>21 THE VIDEOGRAPHER: The time is 11:24, 11:25:05</p> <p>22 and we are back on the record. 11:25:15</p> <p>23 Q. (BY MR. SMITH) Dr. Kasbekar, in 11:25:16</p> <p>24 Exhibit 1, your report, at the bottom of Page 6, you 11:25:20</p> <p>25 make reference to a recall notice issued by Chart in 11:25:24</p> <p style="text-align: right;">Page 72</p>
<p>1 the accuracy of the language in the report. 11:12:51</p> <p>2 Q. (BY MR. SMITH) Okay. 11:12:53</p> <p>3 A. I think that's it. 11:12:54</p> <p>4 MS. ZEMAN: Ben, could we get a break 11:12:56</p> <p>5 sometime in the near future? 11:12:58</p> <p>6 MR. SMITH: Sure. Let me ask one more 11:13:00</p> <p>7 question. 11:13:02</p> <p>8 Q. (BY MR. SMITH) Assuming liquid nitrogen 11:13:02</p> <p>9 escaped into the interstitial space in a liquid form 11:13:12</p> <p>10 at minute 1, how long would it take for condensation 11:13:19</p> <p>11 or ice to form on the outside of the tank? 11:13:22</p> <p>12 A. I don't know the answer to that because 11:13:26</p> <p>13 I don't know what -- at this point in time at what 11:13:28</p> <p>14 rate that nitrogen would be entering into interstitial 11:13:33</p> <p>15 space. 11:13:36</p> <p>16 Q. And that would be the factor that would 11:13:36</p> <p>17 limit -- or that would determine the timing? 11:13:39</p> <p>18 A. That certainly would have to do with the 11:13:41</p> <p>19 extent of any condensation and ice formation on the 11:13:43</p> <p>20 other side. You know, we have limited examination of 11:13:47</p> <p>21 the crack, some potential other leak sites that may or 11:13:52</p> <p>22 may not pan out to be leak sites. So without 11:13:58</p> <p>23 additional work, getting an exact rate of nitrogen -- 11:14:01</p> <p>24 liquid nitrogen seepage into the vacuum space would be 11:14:07</p> <p>25 a total guess at this point. 11:14:11</p> <p style="text-align: right;">Page 71</p>	<p>1 late April of 2018 regarding aluminum tanks, right? 11:25:28</p> <p>2 A. Yes. 11:25:32</p> <p>3 Q. Why do you make that reference? 11:25:32</p> <p>4 A. I think -- as I state in the report, is 11:25:37</p> <p>5 that reference is in there because it shows that Chart 11:25:39</p> <p>6 is aware of the fact that if you have a loss of 11:25:46</p> <p>7 vacuum, it's a significant event that requires 11:25:49</p> <p>8 immediate attention. And when I say a "loss of 11:25:52</p> <p>9 vacuum," I'm thinking more along the lines of an 11:25:56</p> <p>10 immediate loss of vacuum. 11:25:59</p> <p>11 Q. Isn't that contained in the Chart manual 11:26:00</p> <p>12 for MVE tanks? 11:26:03</p> <p>13 A. I didn't see anything -- and perhaps I 11:26:04</p> <p>14 missed it -- that talks about what I would consider a 11:26:06</p> <p>15 catastrophic loss of vacuum. Vacuum degradation, I 11:26:10</p> <p>16 know, is addressed throughout the Chart documents, but 11:26:15</p> <p>17 not something that addresses a crack on the inside of 11:26:18</p> <p>18 the tank that can lead to not only the loss of vacuum 11:26:22</p> <p>19 but the infiltration of liquid nitrogen into what was 11:26:24</p> <p>20 the vacuum space. 11:26:27</p> <p>21 Q. Okay. So you agree that Chart discusses 11:26:29</p> <p>22 loss of vacuum in general, but it doesn't discuss -- 11:26:32</p> <p>23 but you don't recall seeing anything about a 11:26:35</p> <p>24 catastrophic loss of vacuum? 11:26:37</p> <p>25 A. I don't recall seeing anything about a 11:26:39</p> <p style="text-align: right;">Page 73</p>

1 catastrophic or sudden loss of vacuum or anything that 11:26:42	1 manufactured? 11:29:07
2 discusses the introduction of nitrogen into the vacuum 11:26:48	2 A. I don't recall off the top of my head. 11:29:08
3 space in any of the Chart documents that would have 11:26:52	3 Q. Do you know for a fact that it wasn't 11:29:09
4 been produced to the end user. I think in their 11:26:53	4 manufactured in New Prague, Minnesota? 11:29:13
5 DFMECA, there's some discussion of that, but not in 11:26:59	5 A. I don't know that for a fact, but it's 11:29:15
6 anything that the clinic would have had access to or a 11:27:03	6 irrelevant to me because I do concede that is a 11:29:17
7 consumer of Chart products would have had access to. 11:27:05	7 different type of tank than what's in this recall. 11:29:20
8 Q. Chart's recall notice only concerned 11:27:09	8 Again, the point of my bringing the recall into my 11:29:23
9 aluminum tanks, right? 11:27:13	9 report is statements such as immediately remove unit 11:29:25
10 A. Correct. 11:27:13	10 from service, which is an acknowledgment that whether 11:29:30
11 Q. And Tank 4 is not an aluminum tank? 11:27:13	11 you argue this is a catastrophic loss of vacuum or a 11:29:33
12 A. No, it's not. 11:27:13	12 more gradual loss of vacuum, if you don't have vacuum, 11:29:36
13 Q. Chart's recall notice involved tanks 11:27:17	13 Chart's instructions to customers is to immediately 11:29:41
14 with a composite neck that used a binding agent? 11:27:17	14 remove the unit from service. 11:29:45
15 A. Correct. 11:27:21	15 Q. And that would be true any time you have 11:29:48
16 Q. And Chart's MVE 808 does not have a 11:27:22	16 a vacuum dewar, right? If you lose vacuum, the dewar 11:29:50
17 composite neck and it doesn't use a binding agent, 11:27:25	17 is not going to work? 11:29:54
18 right? 11:27:27	18 A. Well, I think there's a difference 11:29:56
19 A. That's correct, unless you call a weld a 11:27:28	19 between immediately remove it from service and the 11:29:57
20 binding agent. 11:27:31	20 dewar doesn't work properly, but because you have a 11:30:00
21 Q. And the recall notice actually doesn't 11:27:31	21 loss of vacuum, that's a lot different than having a 11:30:04
22 discuss anything about catastrophic vacuum failures, 11:27:36	22 loss of vacuum where you suck nitrogen into the vacuum 11:30:09
23 does it? 11:27:39	23 space and then structurally compromise the tank. And 11:30:14
24 A. I don't know if it uses the word 11:27:41	24 then I also think, at least from my review of the 11:30:17
25 "catastrophic," but I think the failure mode is 11:27:42	25 Chart documents, the end user is -- to the extent that 11:30:20
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1 basically a detachment at the area that's glued, which 11:27:48	1 they're advised about vacuum space, it's more vacuum 11:30:26
2 would lead to a very sudden loss of vacuum. It 11:27:52	2 degradation, not so much that one minute you could 11:30:30
3 doesn't take much of a hole to lose vacuum. 11:27:55	3 have a functional dewar, and then the next minute you 11:30:33
4 Q. And the recall notice applied only to 11:28:01	4 have a dewar that has no vacuum and might, in fact, be 11:30:37
5 tanks that were manufactured in New Prague, Minnesota, 11:28:05	5 draining the cooling medium, the liquid nitrogen, into 11:30:40
6 right? 11:28:15	6 the vacuum space away from the samples you're trying 11:30:44
7 MS. ZEMAN: Objection, document speaks 11:28:15	7 to protect. 11:30:48
8 for itself. 11:28:17	8 Q. And it is your theory and your 11:30:49
9 A. Let me get one second to get the 11:28:17	9 assumption that there was a catastrophic vacuum loss 11:30:50
10 document in front of me. 11:28:19	10 in Tank 4, right? 11:30:54
11 MR. SMITH: I can mark it if you want, 11:28:21	11 A. I wouldn't call it an assumption. You 11:30:56
12 and he'll speed things up. 11:28:23	12 can call it a theory, but I think there's pretty good 11:31:00
13 (Deposition Exhibit 3 was marked.) 11:28:37	13 evidence that there was a sudden vacuum loss. I 11:31:02
14 Q. (BY MR. SMITH) So I've marked as 11:28:37	14 can't -- and I've tried to envision another way that 11:31:06
15 Exhibit 3 a document entitled Important Recall Notice, 11:28:38	15 you have that type of explosion, as we're calling it, 11:31:11
16 dated April 23rd, 2018. Dr. Kasbekar, is this the 11:28:42	16 that results in that type of deformation of the tank. 11:31:16
17 recall notice that you referenced in your report? 11:28:46	17 [REDACTED]
18 A. It is. 11:28:50	[REDACTED]
19 Q. And you see under serial numbers 11:28:51	[REDACTED]
20 affected, the last paragraph, it states, "This recall 11:28:54	[REDACTED]
21 does not pertain to Chart products manufactured 11:28:56	[REDACTED]
22 anywhere other than New Prague, Minnesota, U.S.A." Do 11:29:00	[REDACTED]
23 you see that? 11:29:04	[REDACTED]
24 A. I do see that. 11:29:04	[REDACTED]
25 Q. And do you know where Chart's Tank 4 was 11:29:05	25 [REDACTED]
Page 75	Page 77



<p>1 [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]</p> <p>8 Q. In your summary of opinions which begins 11:32:23 9 on Page 20 and 21, I'm going to direct your attention 11:32:34 10 to Paragraph 1 on Page 21. And you note that Tank 4 11:32:41 11 was approximately six years old as of March 4th, 2018, 11:32:49 12 right? 11:32:53 13 A. Correct. 11:32:54 14 Q. And as a general matter, do you agree 11:32:54 15 that the expected useful life of a product depends 11:32:56 16 upon how and whether the product is maintained? 11:32:59 17 A. That's certainly a possibility, but I 11:33:04 18 would expect as a manufacturer and designer that the 11:33:06 19 expected useful life would also account for 11:33:11 20 foreseeable use, foreseeable misuse, and maybe to some 11:33:15 21 extent with certain products foreseeable abuse. 11:33:20 22 Q. Okay. What in your opinion is the 11:33:24 23 foreseeable misuse and/or abuse of a Chart MVE 808 11:33:26 24 tank? 11:33:33 25 A. Unrelated to anything that occurred to 11:33:33 Page 78</p>	<p>1 equipment, it's got shock monitors on the box. So if 11:35:03 2 it gets to wherever it's going and those monitors 11:35:06 3 indicate a shock above a certain level, even though 11:35:10 4 there may not be physical damage, I've got a shock 11:35:13 5 indicator that I'm talking to FedEx about and say 11:35:16 6 whatever, this may have damaged our equipment. Those 11:35:20 7 are -- 11:35:23 8 Q. Let me go back to the first one you 11:35:23 9 said. 11:35:25 10 A. Sure. 11:35:26 11 Q. Is it in your opinion a foreseeable 11:35:26 12 misuse that someone would allow a cryogenic MVE 808 11:35:28 13 tank to come to room temperature by not filling it 11:35:35 14 with liquid nitrogen and then filling it back up with 11:35:40 15 liquid nitrogen? I think that's what you said. 11:35:46 16 A. I mean, I could see that being a 11:35:48 17 foreseeable use. Unless there are instructions -- and 11:35:54 18 quite frankly, if Chart considers that to be a misuse 11:35:58 19 or abuse, then I would expect there to be an 11:36:00 20 on-product warning saying, "Do not take a room 11:36:04 21 temperature in an MVE 800 tank and place X number of 11:36:07 22 liters of nitrogen into it." So absent that warning, 11:36:13 23 I think it's a foreseeable use. 11:36:17 24 I'll also tell you that over the years 11:36:19 25 of my experience with dewars is that I take a dewar 11:36:22 Page 80</p>
<p>1 this tank, I could probably sit here for hours and 11:33:38 2 come up with foreseeable misuse. You could have a 11:33:42 3 situation where somebody is draining the tank to room 11:33:47 4 temperature and then dumping in large amounts of 11:33:51 5 nitrogen quickly. I think that's a -- you know, maybe 11:33:53 6 a foreseeable misuse, but it depends upon the 11:33:58 7 instructions and warnings that come with the tank. If 11:34:01 8 there's an instruction or warning that says you need 11:34:03 9 to equilibrate the tank by dumping in a small 11:34:06 10 amount -- a small volume of nitrogen, letting it 11:34:12 11 equilibrate, and adding more, then if somebody were to 11:34:15 12 shock it by not following the instructions, that could 11:34:19 13 be a foreseeable misuse. 11:34:21 14 If someone were to beat it with a bat to 11:34:23 15 get the lid loose because there's frost on it, that 11:34:26 16 would in my mind be a foreseeable misuse or abuse. 11:34:30 17 You know, handling in transport, if things are not 11:34:35 18 packaged properly or dropped, those are all things 11:34:40 19 that a product manufacturer, designer needs to kind of 11:34:43 20 take into account. If he's shipping something that's 11:34:46 21 susceptible to especially undetectable damage from 11:34:49 22 shock, then there's packaging and shipping instruments 11:34:52 23 to ensure that that doesn't happen, or if it did 11:34:55 24 happen, that there's some notice. 11:34:58 25 Like, for example, if I ship sensitive 11:35:00 Page 79</p>	<p>1 that's empty and go to a nitrogen tank and fill it and 11:36:26 2 then go to another device and then put nitrogen into 11:36:31 3 that device. So I wouldn't expect when I go to the 11:36:34 4 nitrogen tank to fill my dewar that because I filled 11:36:39 5 an empty dewar that that's going to cause a dewar to 11:36:42 6 fail prematurely. 11:36:46 7 Q. I'm sorry. I misunderstood what you 11:36:49 8 said. Let me ask you this. Would it be a foreseeable 11:36:50 9 misuse to use a Chart tank to store biological samples 11:36:54 10 and allow the liquid nitrogen level to drop to zero? 11:36:59 11 A. I would agree that would be -- I don't 11:37:04 12 know if it's misuse of the Chart -- I won't agree 11:37:05 13 that's necessarily misuse of the Chart product, but I 11:37:08 14 would consider that to be -- even though I'm not an 11:37:12 15 expert in biological tissues, I would consider that to 11:37:14 16 be an improper way of storing biological tissues, to 11:37:18 17 let them -- let the nitrogen deplete completely and 11:37:21 18 then reintroduce it into the tank. 11:37:25 19 Q. Right. So in your opinion, Chart 11:37:29 20 couldn't foresee the fact that a sophisticated user 11:37:31 21 would allow the liquid nitrogen level of a tank 11:37:34 22 containing biological specimens to drop to zero; is 11:37:38 23 that right? 11:37:41 24 MS. ZEMAN: Objection to form. 11:37:41 25 A. I certainly think Chart could foresee a 11:37:42 Page 81</p>



<p>1 liquid nitrogen tank dropping to zero level and it 11:37:49  2 being refilled. That's definitely foreseeable. 11:37:52  3 Whether or not Chart could foresee a fertility clinic 11:37:55  4 allowing that to happen or not is a completely 11:38:02  5 different item. I don't know the answer to that. I 11:38:08  6 don't see any evidence that that happened here, but 11:38:10  7 you're pushing me outside of my area of expertise, but 11:38:12  8 as a scientist, I would think if Chart let the level 11:38:15  9 go down to zero -- I'm sorry, not Chart. If the 11:38:18  10 clinic allowed the level to go down to zero and then 11:38:21  11 dumped nitrogen back in there that you probably would 11:38:24  12 have a total loss of tissue viability, which, my 11:38:29  13 understanding, did not occur here, but, again, you're 11:38:32  14 pushing me outside my area of expertise. But with no 11:38:36  15 nitrogen in that tank and minus 150 C being the 11:38:39  16 temperature that I'm familiar with as a temperature at 11:38:43  17 which these samples would likely be unusable, I would 11:38:46  18 think no nitrogen in the tank, there's -- nothing is 11:38:51  19 going to be minus 150 C. 11:38:54  20 Q. (BY MR. SMITH) Okay. Do you agree that 11:38:56  21 the expected useful life of a product depends upon how 11:39:02  22 it's used? 11:39:04  23 A. I think I answered that earlier by 11:39:07  24 saying that the expected useful life should take into 11:39:09  25 account foreseeable use and foreseeable misuse. 11:39:14  Page 82</p>	<p>1 degradation, and if my memory is correct, I think the 11:40:39  2 warranty in general on the tanks, I think at least on 11:40:44  3 the 800, is somewhere around five years for vacuum. I 11:40:47  4 could be wrong about that, but there is a vacuum 11:40:51  5 warranty on the tank that I'm familiar with, but I did 11:40:53  6 not see anything that -- and I may have missed it; 11:40:58  7 there was a fair number of documents -- that Chart 11:41:05  8 provides to the end user that says you should 11:41:10  9 periodically have the vacuum checked, and I looked for 11:41:14  10 that. I also looked for something to indicate whether 11:41:17  11 or not Chart somehow refurbishes tanks by re -- 11:41:20  12 Q. Revacuuming? 11:41:26  13 A. Revacuuming it, yes, yes. 11:41:28  14 Q. And you couldn't find anything in that 11:41:30  15 regard? 11:41:32  16 A. I didn't find it in the documents. 11:41:32  17 Again, I may have missed it, but I did not see it. 11:41:34  18 Q. Do you know whether or not PFC performed 11:41:37  19 any preventive maintenance of any type on Tank 4? 11:41:39  20 A. To the best of my knowledge, other than 11:41:42  21 daily checks of nitrogen levels and operation of the 11:41:47  22 tank, I have not read anything where that tank had 11:41:54  23 been defrosted. 11:41:58  24 Q. And you have no personal knowledge of 11:41:58  25 any daily checks of nitrogen levels? You're just 11:42:01  Page 84</p>
<p>1 Q. Do you know whether or not Chart 11:39:21  2 recommends any maintenance regarding its MVE freezers 11:39:24  3 on a periodic basis? 11:39:27  4 A. I don't know about the periodic basis 11:39:29  5 part, but I am aware that Chart does, for example, 11:39:34  6 suggest a complete defrost under certain conditions. 11:39:41  7 Q. And what are those conditions? 11:39:44  8 A. I don't know all of them, but one of the 11:39:45  9 conditions involves -- well, excessive frost buildup 11:39:48  10 certainly would be one, but fill issues would be 11:39:53  11 another. 11:39:57  12 Q. In other words, after there is a problem 11:39:59  13 filling the tank adequately with liquid nitrogen, 11:40:01  14 Chart recommends a defrost? 11:40:04  15 A. That's correct. 11:40:06  16 Q. And what's the purpose of a defrost? 11:40:06  17 A. Well, under that condition, the purpose 11:40:09  18 of the defrost could be that you could have ice 11:40:13  19 blockage in the fill port. 11:40:17  20 Q. Do you know whether or not Chart makes 11:40:19  21 any recommendations regarding the vacuum? 11:40:21  22 A. With regard to maintenance? 11:40:26  23 Q. Yes. 11:40:27  24 A. If they do, I have not found it. I 11:40:28  25 understand that Chart does anticipate some vacuum 11:40:36  Page 83</p>	<p>1 relaying testimony that's been given in this case, 11:42:05  2 right? 11:42:08  3 A. Well, testimony, and I think there are 11:42:08  4 logs that have indicated the time and the level that 11:42:10  5 it was filled to. 11:42:13  6 Q. I thought you indicated that you hadn't 11:42:13  7 reviewed the TEC 3000 controller data very carefully? 11:42:16  8 A. I reviewed the log data that indicates 11:42:20  9 the time of day and the fill to 14 inches. So that's 11:42:26  10 what I'm referring to. 11:42:31  11 Q. You're referring to the handwritten 11:42:32  12 notes? 11:42:34  13 A. Yes. Well, the part I reviewed I think 11:42:34  14 was typed up at that point, but . . . 11:42:37  15 Q. With regard to Paragraph 2, you state in 11:42:40  16 your first sentence of Paragraph 2 -- or Opinion 11:42:46  17 Number 2, quote, "Chart knew or should have known that 11:42:49  18 its MVE cryogenic freezer, such as the subject MVE 808 11:42:54  19 tank, are used primarily for highly sensitive biotech 11:42:59  20 applications including biological storage of human 11:43:04  21 eggs and embryos." Do you see that? 11:43:07  22 A. I do, and I think I should probably 11:43:10  23 change "are" to "is." 11:43:12  24 Q. It's okay. And what is the basis for 11:43:15  25 your opinion that Chart knew or should have known that 11:43:17  Page 85</p>



<div data-bbox="245 117 818 974"><p>[REDACTED]</p></div> <div data-bbox="773 974 850 1001">Page 90</div>	<div data-bbox="862 117 1435 974"><p>[REDACTED]</p></div> <div data-bbox="1390 974 1468 1001">Page 92</div>
<div data-bbox="245 1010 818 1869"><p>[REDACTED]</p></div> <div data-bbox="773 1869 850 1896">Page 91</div>	<div data-bbox="862 1010 1435 1869"><p>[REDACTED]</p></div> <div data-bbox="1390 1869 1468 1896">Page 93</div>

<div>[REDACTED]</div> <div>5</div> <div>Page 94</div>	<div>[REDACTED]</div> <div>Page 96</div>
<div>[REDACTED]</div> <div>Page 95</div>	<div>[REDACTED]</div> <div>Page 97</div>

<div data-bbox="245 134 837 974"><p>[REDACTED]</p></div> <div data-bbox="771 974 850 1003">Page 98</div>	<div data-bbox="862 134 1455 974"><p>[REDACTED]</p></div> <div data-bbox="1386 974 1472 1003">Page 100</div>
<div data-bbox="245 1031 837 1871"><p>[REDACTED]</p></div> <div data-bbox="771 1871 850 1900">Page 99</div>	<div data-bbox="862 1031 1455 1871"><p>[REDACTED]</p></div> <div data-bbox="1386 1871 1472 1900">Page 101</div>

<div data-bbox="245 121 857 982"><p>[REDACTED]</p></div> <div data-bbox="763 974 852 1003">Page 102</div>	<div data-bbox="863 121 1476 982"><p>[REDACTED]</p></div> <div data-bbox="1385 974 1474 1003">Page 104</div>
<div data-bbox="245 1024 857 1885"><p>[REDACTED]</p></div> <div data-bbox="763 1877 852 1906">Page 103</div>	<div data-bbox="863 1024 1476 1885"><p>[REDACTED]</p></div> <div data-bbox="1385 1877 1474 1906">Page 105</div>

<div data-bbox="245 117 857 978"><p>[REDACTED]</p></div> <div data-bbox="763 972 852 1001">Page 106</div>	<div data-bbox="867 117 1479 978"><p>[REDACTED]</p></div> <div data-bbox="1380 972 1472 1001">Page 108</div>
<div data-bbox="245 1010 857 1871"><p>[REDACTED]</p></div> <div data-bbox="763 1866 852 1896">Page 107</div>	<div data-bbox="867 1010 1479 1871"><p>[REDACTED]</p></div> <div data-bbox="1380 1866 1472 1896">Page 109</div>



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<div data-bbox="245 134 829 974"><p>[REDACTED]</p></div>	<div data-bbox="867 134 1451 974"><p>[REDACTED]</p></div>
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Age Group	Percentage of Respondents
18-24	15%
25-34	12%
35-44	10%
45-54	9%
55-64	8%
65-74	7%
75-84	6%
85-94	5%
95-104	4%
105-114	3%
115-124	2%
125-134	1%
135-144	1%
145-154	1%
155-164	1%
165-174	1%
175-184	1%
185-194	1%
195-204	1%

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<div data-bbox="245 134 841 974"><p>[REDACTED]</p></div> <div data-bbox="763 974 852 1001">Page 134</div>	<div data-bbox="868 134 1469 974"><p>[REDACTED]</p></div> <div data-bbox="1388 974 1469 1001"></div>
<div data-bbox="245 1031 841 1871"><p>[REDACTED]</p></div> <div data-bbox="763 1871 852 1898"></div>	<div data-bbox="868 1031 1469 1871"><p>[REDACTED]</p></div> <div data-bbox="1388 1871 1469 1898"></div>



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<div data-bbox="245 1031 829 1871"><p>[REDACTED]</p></div>	<div data-bbox="862 1031 1469 1871"><p>[REDACTED]</p></div>



<div data-bbox="245 117 857 978"><p>[REDACTED]</p></div>	<div data-bbox="865 117 1461 978"><p>[REDACTED]</p></div>
Page 146	
<div data-bbox="245 1010 857 1871"><p>[REDACTED]</p></div>	<div data-bbox="865 1010 1461 1871"><p>[REDACTED]</p></div>

<p>6 Q. Paragraph 7, we've talked about already? 13:44:32</p> <p>7 A. Yes. 13:44:34</p> <p>8 Q. Let me ask you a few more questions 13:44:34</p> <p>9 about your report. On Page 9 in the middle, you talk 13:44:36</p> <p>10 about the destructive testing that took place in 13:44:50</p> <p>11 September and October of this year. 13:44:54</p> <p>12 A. Yes. 13:45:02</p> <p>13 Q. And you note that to pressurize the 13:45:02</p> <p>14 vacuum space, helium was put into the vacuum space at 13:45:05</p> <p>15 a pressure of 20 inches of water. 13:45:10</p> <p>16 A. Uh-huh. 13:45:13</p> <p>17 Q. Is that right? 13:45:13</p> <p>18 A. Yes. 13:45:14</p> <p>19 Q. And that took a number of hours, didn't 13:45:14</p> <p>20 it? 13:45:17</p> <p>21 A. It did. 13:45:17</p> <p>22 Q. And can you estimate what number of 13:45:18</p> <p>23 liters of helium were put into the tank to achieve 20 13:45:22</p> <p>24 inches of water? 13:45:27</p> <p>25 A. I can't sitting here today. I may be 13:45:28</p> <p style="text-align: right;">Page 150</p>	<p>1 dissertation topic with regard to plastics, but the 13:47:02</p> <p>2 majority of hands-on work I've done both as a graduate 13:47:06</p> <p>3 student and postgrad have been with metal parts. 13:47:12</p> <p>4 Q. (BY MR. SMITH) Okay. If you go to 13:47:19</p> <p>5 Page 27, it lists the professional societies that you 13:47:20</p> <p>6 are a member of. 13:47:22</p> <p>7 A. Yes. 13:47:24</p> <p>8 Q. And you're a member of the Society of 13:47:24</p> <p>9 Plastics Engineers, right? 13:47:27</p> <p>10 A. Correct. 13:47:28</p> <p>11 Q. Is there a set of metal engineers? 13:47:28</p> <p>12 A. Well, that would have been ASM, which is 13:47:31</p> <p>13 Materials Information Society, that publishes the 13:47:34</p> <p>14 metals handbook. 13:47:38</p> <p>15 Q. Okay. 13:47:39</p> <p>16 A. I don't know if I have -- yeah, I have 13:47:39</p> <p>17 TMS, which is The Metallurgy Society. Past member, 13:47:43</p> <p>18 one of the reasons I just discontinued that, it was 13:47:47</p> <p>19 really basically redundant with the information and 13:47:50</p> <p>20 the benefits I got from ASM, which is a bigger 13:47:52</p> <p>21 society. 13:47:55</p> <p>22 Q. When you say TSM, did you mean TMS? 13:47:55</p> <p>23 A. Yes, TMS, TMS, second to last. 13:48:00</p> <p>24 Q. And then I have to ask you this 13:48:08</p> <p>25 question. 13:48:10</p> <p style="text-align: right;">Page 152</p>
<p>1 able to go back to photographs to determine that based 13:45:31</p> <p>2 upon the time, but that's -- I can't tell you the 13:45:39</p> <p>3 amount of helium that was put in there. 13:45:42</p> <p>4 Q. Can you estimate it? If you can't, 13:45:44</p> <p>5 that's fine. 13:45:46</p> <p>6 A. No, not sitting here today, I can't. 13:45:47</p> <p>7 Q. If you go to Page 25, this lists 13:45:48</p> <p>8 relevant experience and postgraduate training. 13:46:09</p> <p>9 A. Uh-huh. 13:46:13</p> <p>10 Q. And I think I asked you this question at 13:46:13</p> <p>11 the beginning of the deposition, but isn't it correct 13:46:15</p> <p>12 that with regard to this listing of relevant 13:46:19</p> <p>13 experience and postgraduate training, you have more 13:46:22</p> <p>14 experience and training in plastics and polymers than 13:46:24</p> <p>15 you do metals? 13:46:27</p> <p>16 MS. ZEMAN: Objection, asked and 13:46:28</p> <p>17 answered. 13:46:29</p> <p>18 A. Yeah, I don't know that that's 13:46:29</p> <p>19 necessarily true. I mean, the very first thing on 13:46:30</p> <p>20 this, failure analysis of metals and plastics, and I 13:46:34</p> <p>21 consistently will participate in online training 13:46:42</p> <p>22 sessions, most of them -- a lot of them from Struers, 13:46:44</p> <p>23 which are exclusively metal failure type seminars. I 13:46:49</p> <p>24 would say that it's well-balanced. I do think that I 13:46:55</p> <p>25 have a little bit of a unique capability due to my 13:46:59</p> <p style="text-align: right;">Page 151</p>	<p>1 A. Sure. 13:48:11</p> <p>2 Q. On the top of Page 28, you list as a 13:48:11</p> <p>3 seminar or a publication, "Seeing is Believing: 13:48:13</p> <p>4 Winning Your Case Through the Use of Computer 13:48:18</p> <p>5 Simulation," which you provided to the Stark County 13:48:21</p> <p>6 Academy of Trial Lawyers in the fall of 20- -- or 13:48:25</p> <p>7 1994. Is that right? 13:48:30</p> <p>8 A. Yes. 13:48:34</p> <p>9 Q. And what is the nature of that 13:48:34</p> <p>10 publication? 13:48:36</p> <p>11 A. Well, first of all, the Seeing is 13:48:37</p> <p>12 Believing is their title, not mine. I was invited to 13:48:39</p> <p>13 speak up there basically on the use of computer 13:48:43</p> <p>14 simulation, and I discussed its application ranging 13:48:48</p> <p>15 from automobile vehicle simulation to finite element 13:48:51</p> <p>16 analysis to evaluate stresses in parts. It was back 13:48:53</p> <p>17 in the '90s. It was much more cutting-edge 13:48:56</p> <p>18 technology, and we were kind of one of the people at 13:49:01</p> <p>19 the forefront. 13:49:07</p> <p>20 Q. Are you -- strike that. Have you 13:49:07</p> <p>21 undertaken any work to develop any animations for this 13:49:10</p> <p>22 case? 13:49:13</p> <p>23 A. No. 13:49:13</p> <p>24 MR. SMITH: Sorry. And I don't know if 13:49:35</p> <p>25 we actually need to -- it's in a binder, but let's 13:49:36</p> <p style="text-align: right;">Page 153</p>

<p>1 just mark the documents inside it, the pages inside 13:49:40</p> <p>2 it. 13:49:42</p> <p>3 (Deposition Exhibit 6 was marked.) 13:49:53</p> <p>4 Q. (BY MR. SMITH) So, Dr. Kasbekar, I've 13:49:58</p> <p>5 marked as Exhibit 6 a printout of the controller log 13:50:02</p> <p>6 from the controller attached to Tank 4, and I'll 13:50:08</p> <p>7 represent to you and for the record that the native 13:50:13</p> <p>8 file of this document is Bates-stamped CHART 070093. 13:50:17</p> <p>9 And we've placed it in a binder called 10/18/19 13:50:29</p> <p>10 Maximum Event Log. 13:50:35</p> <p>11 And I take it based upon your prior 13:50:40</p> <p>12 testimony today you've reviewed this data briefly, but 13:50:42</p> <p>13 not considered it deeply. Is that fair to say? 13:50:45</p> <p>14 A. I haven't, yeah, gone through it 13:50:48</p> <p>15 probably with as much vigor as I may need to. 13:50:50</p> <p>16 Q. Okay. And would you agree with me that 13:50:52</p> <p>17 if you look on these sheets, there's record numbers 13:50:57</p> <p>18 which also correspond to line numbers -- 13:51:10</p> <p>19 A. Yes. 13:51:14</p> <p>20 Q. -- on the left-hand column? 13:51:14</p> <p>21 A. Yes. 13:51:19</p> <p>22 Q. And two columns over, they provide a 13:51:19</p> <p>23 date for the event, a time, Temperature A, Temperature 13:51:21</p> <p>24 B, LN2 level, LN2 usage, and then event codes? 13:51:24</p> <p>25 A. Yes. 13:51:29</p> <p style="text-align: right;">Page 154</p>	<p>1 Q. And then would you agree with me that at 13:53:31</p> <p>2 line 18324, which is on Christmas Day of 2013 -- 13:53:35</p> <p>3 A. 18324, okay. 13:53:44</p> <p>4 Q. -- that the liquid nitrogen level was 8 13:53:49</p> <p>5 inches? 13:53:52</p> <p>6 A. I do see that. 13:53:53</p> <p>7 Q. Okay. And would you agree with me that 13:53:53</p> <p>8 between December 25th of 2013 and December 30th of 13:53:55</p> <p>9 2013 the liquid nitrogen level decreased from 8 inches 13:54:02</p> <p>10 to a level of zero? 13:54:07</p> <p>11 A. I agree that that's what the controller 13:54:10</p> <p>12 is indicating. 13:54:14</p> <p>13 Q. Okay. And you don't have any basis to 13:54:16</p> <p>14 believe at this point that this controller data is 13:54:20</p> <p>15 inaccurate, right? 13:54:22</p> <p>16 A. I don't have sufficient information to 13:54:24</p> <p>17 tell you one way or the other. 13:54:26</p> <p>18 Q. Okay. And do you know what the 13:54:28</p> <p>19 notations LL and US mean? 13:54:32</p> <p>20 A. Low level, and I can't remember what the 13:54:37</p> <p>21 US is. I looked it up at one point, but I don't 13:54:41</p> <p>22 remember. 13:54:45</p> <p>23 Q. Okay. And do you know what the notation 13:54:45</p> <p>24 F means? 13:54:49</p> <p>25 A. I think fill, but again, when I first 13:54:51</p> <p style="text-align: right;">Page 156</p>
<p>1 Q. If you could turn -- well, do you agree 13:51:29</p> <p>2 with me to the extent you've already reviewed this 13:51:35</p> <p>3 portion of the data that in December of 2013 and over 13:51:38</p> <p>4 the Christmas holiday the liquid nitrogen level in 13:51:44</p> <p>5 Tank 4 went to zero? 13:51:49</p> <p>6 A. December of 2013? 13:51:50</p> <p>7 Q. '13. 13:51:53</p> <p>8 A. Do you have a page number by chance? 13:51:55</p> <p>9 Q. Yes, turn to Pages 260 to 261. 13:51:56</p> <p>10 A. And what was the date again? Or what 13:52:14</p> <p>11 record number? 13:52:17</p> <p>12 Q. It was over -- it's Record Numbers 13:52:18</p> <p>13 18282 -- 13:52:25</p> <p>14 A. 18282. Okay. 13:52:30</p> <p>15 Q. -- and you can go up to 8 -- you can go 13:52:31</p> <p>16 down to 18355. 13:52:37</p> <p>17 A. 18355? 13:52:51</p> <p>18 Q. Yeah. So if you look at Record Number 13:52:53</p> <p>19 18355, it shows that on December 23rd of 2013, the 13:52:57</p> <p>20 liquid nitrogen level in the tank was 9 inches, right? 13:53:03</p> <p>21 A. At 355? 13:53:12</p> <p>22 Q. Yes. 13:53:14</p> <p>23 A. Yes. Hold on one sec. 13:53:24</p> <p>24 Q. And then -- 13:53:29</p> <p>25 A. Yes, I do see it. 13:53:30</p> <p style="text-align: right;">Page 155</p>	<p>1 got this, I looked up the codes in the chart 13:54:54</p> <p>2 documents. I did not commit them to memory. 13:54:57</p> <p>3 Q. And can you confirm for me that based 13:54:59</p> <p>4 upon this data the last fill that occurred during this 13:55:03</p> <p>5 time frame was on December 23rd, 2013 until 13:55:08</p> <p>6 December 30th, 2013? 13:55:14</p> <p>7 A. Let me take a look. 13:55:16</p> <p>8 I do see that. December -- what was the 13:55:37</p> <p>9 other cut-off date? Was it the 30th? 13:55:40</p> <p>10 Q. Yes. 13:55:42</p> <p>11 A. I do not see an F, which I believe to be 13:55:43</p> <p>12 a fill indicator, in that interim period. 13:55:46</p> <p>13 Q. So at least according this data, between 13:55:49</p> <p>14 December 23rd, 2013 and December 30th, 2013, the tank 13:55:52</p> <p>15 was not filled? 13:55:55</p> <p>16 A. Correct. 13:55:56</p> <p>17 Q. I think we've already established that 13:56:00</p> <p>18 it's your belief that a liquid nitrogen level of zero 13:56:03</p> <p>19 is an unsafe level, right? 13:56:06</p> <p>20 A. If zero means zero inches above the 13:56:10</p> <p>21 false bottom -- then, again, you're a little bit 13:56:15</p> <p>22 outside my area of expertise, but it certainly I would 13:56:21</p> <p>23 think would be an unwanted level, and depending upon 13:56:25</p> <p>24 the amount of time that it's at that level, I suspect 13:56:28</p> <p>25 it could cause damage the samples that are being 13:56:30</p> <p style="text-align: right;">Page 157</p>

1 stored. 13:56:32	1 Q. Okay. Take a look at Pages 370 to 371 13:59:39
2 Q. According to this data, even as of 13:56:36	2 as one example of continuous temperature measurement 13:59:44
3 December 23rd, 2013, to the extent 11-inch racks were 13:56:43	3 differentials between Temperature A and Temperature B. 13:59:48
4 being used, the liquid nitrogen level was below the 13:56:49	4 A. 370 to 371? 13:59:52
5 level of 11-inch racks, right? 13:56:53	5 Q. Yes. 13:59:54
6 A. I can't agree that it was below that, 13:56:55	6 A. Okay. 13:59:55
7 but I could agree that that's what the controller is 13:56:58	7 Okay. 14:00:02
8 indicating. 13:57:01	8 Q. And do you agree with me that the 14:00:03
9 Q. Right. 13:57:03	9 Temperature A in many instances, according to this 14:00:05
10 A. So absent any sort of malfunction, it's 13:57:04	10 data, was between minus 125 and minus 128? 14:00:10
11 properly calibrated and working correctly, then that 13:57:06	11 A. And what's the range that you're giving 14:00:25
12 would be the case. The interesting part of this, 13:57:09	12 me from? 14:00:27
13 though, is I don't see much -- sitting here today, 13:57:19	13 Q. I'm giving you the range from record 14:00:28
14 much variation in the temperature. 13:57:25	14 26003 on 11/13/2012. 14:00:31
15 Q. Yeah. Did you -- do you have any 13:57:28	15 A. 26003? 14:00:34
16 information as to why both thermocouples in the case 13:57:30	16 Q. Which is at the very top of Page 370. 14:00:36
17 were registering approximately the temperature of 13:57:36	17 A. No, it's not. 14:00:46
18 liquid nitrogen? And I'll represent to you that that 13:57:39	18 Q. Oh, it's not? 14:00:47
19 occurred only on and after December 12th of 2013. 13:57:42	19 A. It's at the bottom of 369. To 26003. 14:00:51
20 A. I mean, either they're -- I would say 13:57:49	20 Q. To 26114. 14:01:02
21 either they're both -- 13:57:54	21 A. And your question is the range is 14:01:10
22 MR. TARANTINO: Object to form. 13:57:56	22 between roughly what and what? 14:01:12
23 A. They're either both placed very, very 13:57:57	23 Q. Let me ask you this question, another 14:01:13
24 low in the tank and there is some nitrogen in there or 13:58:00	24 question. Between that range, do you agree with me 14:01:16
25 perhaps, more likely, the level is giving erroneous 13:58:06	25 that the Temperature A, which corresponds to the top 14:01:18
Page 158	Page 160
1 results. 13:58:10	1 part of the tank, in several instances went below 130 14:01:21
2 Q. (BY MR. SMITH) Okay. So take a look, 13:58:10	2 degrees Celsius? 14:01:25
3 for example, on Page 367. And if you look at line 13:58:13	3 A. Yes, I'm seeing readings below 130 14:01:28
4 number 25849. 13:58:32	4 degrees Celsius. 14:01:31
5 A. 25849. Okay. 13:58:39	5 Q. Now -- 14:01:33
6 Q. Do you see that at least at this point 13:58:42	6 A. Not by much, but by a couple of degrees. 14:01:33
7 in time, November 20th of 2012, there was a 13:58:45	7 Q. -- if you go to record number 18018. 14:01:36
8 differential in the Temperature A and Temperature B 13:58:48	8 A. Page? 14:01:50
9 readings? 13:58:53	9 Q. I have it on Pages 252 and 256. 14:01:52
10 A. I do. 13:58:54	10 A. 18108? 14:01:58
11 Q. And the Temperature A reading in this 13:58:55	11 Q. I'm sorry. I'm sorry. Yes. 18108. 14:02:01
12 instance is minus 20.6, right? 13:58:57	12 A. Okay. 14:02:21
13 A. Yes, but it's surrounded by open circuit 13:59:00	13 Q. Sorry. I'm dyslexic. 18018. 14:02:22
14 indicators on either side of that, that date. 13:59:07	14 A. 18018. Okay. 14:02:25
15 Q. And what does the open circuit indicator 13:59:11	15 Q. All right. And do you agree with me 14:02:32
16 mean? 13:59:15	16 that at least according to this data, this showed a 14:02:34
17 A. Again, this is not something I've 13:59:15	17 liquid nitrogen level as of January 15th of 2014 as 14:02:39
18 thoroughly analyzed, but I would suspect it could mean 13:59:17	18 12.5 inches? 14:02:42
19 that either the sensor is busted or that it's been 13:59:21	19 A. Yes. 14:02:43
20 unplugged. 13:59:25	20 Q. And do you agree with me that according 14:02:43
21 Q. Okay. And when you say the sensor is 13:59:26	21 to this data the liquid nitrogen level dropped over 14:02:48
22 busted, what do you mean by that? 13:59:28	22 the next several days to a level of zero on 14:02:51
23 A. "Busted" is not an engineering term. I 13:59:29	23 January 20th of 2014? 14:02:54
24 mean that there's -- for some reason, there's a break 13:59:32	24 A. I see that it is indicating -- again, 14:03:12
25 in the connection of the sensor to the controller. 13:59:35	25 I'm going to hesitate to answer that the nitrogen 14:03:16
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1 the year. 14:15:13	1 Q. Okay. So the same defense attorney 14:17:38
2 Q. Most people in Colorado go to warmer 14:15:13	2 in -- well, strike that. Was the South Carolina case 14:17:40
3 weather in the winter rather than stay here in the 14:15:16	3 a Jet Ski case? 14:17:45
4 winter. 14:15:18	4 A. Yes. 14:17:46
5 A. I like the cold. 14:15:19	5 Q. So the attorney representing the 14:17:46
6 Q. You do not consider yourself to be an 14:15:20	6 defendant in that case moved to exclude your testimony 14:17:48
7 expert in the area of product warnings, right? 14:15:26	7 there and in the Utah case? 14:17:52
8 A. I have some expertise in product 14:15:28	8 A. That's correct. 14:17:55
9 warnings, but my answer to that is I believe that to 14:15:30	9 Q. And both times, those were successful? 14:17:55
10 develop a proper warning requires more than just an 14:15:35	10 A. Yeah. I know the current one is under 14:17:57
11 engineer to do that. My training is really more along 14:15:39	11 appeal right now. 14:17:58
12 the lines of determining when a warning is necessary 14:15:43	12 Q. Have you had any of your -- strike that. 14:17:59
13 and what the basic ingredients of that warning are, 14:15:46	13 Have you had any other testimony or opinions excluded 14:18:03
14 and then whether or not it meets ANSI requirements in 14:15:50	14 in whole or part? 14:18:06
15 terms of the presentation of the warning, but not so 14:15:53	15 A. Those are the only two cases in thirty- 14:18:07
16 much the precise language in the warning. 14:15:55	16 some years that I'm aware of. 14:18:12
17 Q. Haven't you been quoted in opinions as 14:15:57	17 Q. Were you precluded from testifying to 14:18:19
18 saying, "I wouldn't go out and say I'm a warnings 14:16:03	18 some extent in the case of Royace versus Mercedes 14:18:22
19 expert"? 14:16:07	19 Benz? 14:18:25
20 A. I may have. I mean, as I said, I think 14:16:08	20 A. I think the only preclusion in that case 14:18:25
21 my expertise -- I would not write a warning by myself 14:16:11	21 was for me not to use the word "recall," and then the 14:18:28
22 to be put onto a product. I may say, "Hey, I think 14:16:15	22 only thing that the judge would not allow us to do is 14:18:32
23 this is a situation where a warning is relevant, and 14:16:20	23 we had an exhibit that showed a stress analysis of a 14:18:37
24 it should include these features," but I believe that 14:16:23	24 heater core component that had fractured; and we, 14:18:40
25 human factors and English majors are required to 14:16:28	25 consistent with the practice by most all engineers, 14:18:46
Page 170	Page 172
1 really put together a complete warning. 14:16:30	1 had scaled the deflections up to show the deformed 14:18:49
2 Q. Have you had warning testimony or 14:16:33	2 mode of the heater cord because when something moves a 14:18:55
3 opinions excluded in the past? 14:16:36	3 few 10/1000 of an inch showed it to the jury. And I 14:18:59
4 A. Yes, I have. 14:16:37	4 think the judge in that case said it wasn't to a real 14:19:06
5 Q. How many times? 14:16:38	5 scale, that part of exhibit would not be allowed. 14:19:10
6 A. To the best of my knowledge, it's only 14:16:39	6 That's it. 14:19:12
7 been in a Jet Ski case involving a Kawasaki -- I'm 14:16:42	7 Q. And is it correct the two times your 14:19:13
8 sorry. It may not have been a Kawasaki. I cannot 14:16:50	8 opinions were excluded -- 14:19:16
9 remember the manufacturer. It was either Yamaha or 14:16:55	9 A. That wasn't an opinion. So in Royace, 14:19:17
10 Kawasaki. 14:16:58	10 there were no opinions I'm aware of that were 14:19:21
11 Q. Was your warning testimony excluded in 14:17:00	11 excluded. There was an exhibit that we were not -- 14:19:24
12 the case of Hickerson versus Yamaha Corporation? 14:17:03	12 Q. I understand. I'm going back to the 14:19:27
13 A. Portions of it. 14:17:09	13 Utah -- 14:19:28
14 Q. And that was a warning case, right? 14:17:11	14 A. Okay. 14:19:29
15 A. Yeah, portions of it were. 14:17:12	15 Q. -- the Utah and the South Carolina 14:19:29
16 Q. And your opinion was recently excluded 14:17:14	16 thing. With respect to the two times where your 14:19:32
17 by the District of Utah in a case involving Kawasaki, 14:17:16	17 opinions have been excluded, were those opinions both 14:19:33
18 right? 14:17:20	18 related to warning opinions? 14:19:36
19 A. Yeah, same attorney and all of 14:17:21	19 A. So, I'll tell you. Honestly, the Utah 14:19:37
20 plaintiffs' experts' opinions were thrown out, to the 14:17:25	20 case, you probably know more about it than I do. The 14:19:40
21 extent that means anything. 14:17:28	21 only thing I know is a phone call from my client said 14:19:43
22 Q. When you say "same attorney," what do 14:17:30	22 the judge made a very unusual ruling and all of our 14:19:47
23 you mean? 14:17:34	23 expert testimony has been excluded. The Hickerson 14:19:50
24 A. Same defense attorney as in the prior 14:17:34	24 case, I'm more familiar with, and the majority of my 14:19:54
25 Jet Ski case. 14:17:36	25 design opinions and my mechanical engineering opinions 14:19:57
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<p>1 were allowed in. The issue with the warnings, 14:20:01</p> <p>2 consistent with the opinion I just gave you a second 14:20:03</p> <p>3 ago about what I believe needs to be done to develop a 14:20:05</p> <p>4 proper warning, was that we had not tested our 14:20:09</p> <p>5 warning, and in addition to that, I'll go so far as to 14:20:15</p> <p>6 say is my client, against my recommendation, failed to 14:20:18</p> <p>7 bring in a human factors expert to help in the warning 14:20:21</p> <p>8 development. 14:20:25</p> <p>9 Q. So -- 14:20:26</p> <p>10 A. Let me add one other thing to that too 14:20:27</p> <p>11 while we're on it because I'm a little sensitive to 14:20:29</p> <p>12 it. The same attorney who had the warnings excluded 14:20:32</p> <p>13 was representing the manufacturer who put almost the 14:20:34</p> <p>14 exact same warning in the exact location on future 14:20:37</p> <p>15 products that we proposed in our opinions. So it's a 14:20:39</p> <p>16 little bit ironic that in the Hickerson case clients 14:20:43</p> <p>17 are putting warnings on a seat right where we said to 14:20:50</p> <p>18 put it with almost exactly the same language, yet he 14:20:52</p> <p>19 feels that our opinions don't carry merit. So to the 14:20:55</p> <p>20 extent that that helps. 14:20:58</p> <p>21 Q. Yeah. 14:21:02</p> <p>22 A. That's venting a frustration. 14:21:02</p> <p>23 Q. That's okay. So with regard to the -- 14:21:04</p> <p>24 is it the Henderson case? 14:21:10</p> <p>25 A. Hickerson. 14:21:11</p> <p style="text-align: right;">Page 174</p>	<p>1 that's displayed under the handlebars of it. So that 14:22:35</p> <p>2 was my opinion. 14:22:38</p> <p>3 My recollection of the -- I need to 14:22:39</p> <p>4 reread it, but I think parts of it, the judge 14:22:46</p> <p>5 accepted, but ultimately I think the conclusion was, 14:22:50</p> <p>6 without having tested the efficacy of that warning, 14:22:53</p> <p>7 that we couldn't testify that the warning would have 14:22:58</p> <p>8 done anything. 14:23:01</p> <p>9 Q. And is that testing efficacy of the 14:23:01</p> <p>10 warning, is that the human factors piece that you 14:23:05</p> <p>11 testified? 14:23:09</p> <p>12 A. My recommendation to my client was to 14:23:09</p> <p>13 hire a human factors person, which ultimately he did, 14:23:12</p> <p>14 but not as a testifying expert. So the development of 14:23:15</p> <p>15 the language on the warning that was contained in my 14:23:18</p> <p>16 report was in conjunction with the human factors 14:23:21</p> <p>17 expert. 14:23:24</p> <p>18 My other recommendation was to have a 14:23:24</p> <p>19 panel to review the warning and to basically check off 14:23:26</p> <p>20 whether or not -- how it would influence their 14:23:31</p> <p>21 behavior, a small study to establish that the wording 14:23:33</p> <p>22 was reasonable, and if they read that, they may have 14:23:36</p> <p>23 changed their behavior. That was something that was 14:23:39</p> <p>24 never done and agreed to. 14:23:41</p> <p>25 Q. Okay. 14:23:44</p> <p style="text-align: right;">Page 176</p>
<p>1 Q. Hickerson. So with regard to the 14:21:13</p> <p>2 Hickerson case in South Carolina, were you offering an 14:21:15</p> <p>3 affirmative opinion as to what a warning should be or 14:21:18</p> <p>4 consist of? 14:21:21</p> <p>5 A. I was -- so in the Hickerson case, my 14:21:21</p> <p>6 main opinions had to do with the design of a seat and 14:21:26</p> <p>7 testing that we had done that -- along -- the 14:21:30</p> <p>8 executive summary is on Jet Skis. Some Jet Skis, the 14:21:35</p> <p>9 seat has a substantial lip on it like a bolster. 14:21:41</p> <p>10 Others are perfectly flat. 14:21:44</p> <p>11 In both cases that you're referencing, 14:21:46</p> <p>12 the injured plaintiff slid off the back of the seat, 14:21:48</p> <p>13 and my opinion was essentially that a lip on the back 14:21:52</p> <p>14 of the seat would have reduced the likelihood of 14:21:55</p> <p>15 someone sliding off the back of the seat based on 14:22:01</p> <p>16 physics and common sense. 14:22:03</p> <p>17 In addition to that, some of these Jet 14:22:04</p> <p>18 Skis have a strap to hold onto, and the warning for 14:22:08</p> <p>19 using that strap and wearing a wet suit bottom is 14:22:12</p> <p>20 placed primarily at the front of the Jet Ski between 14:22:15</p> <p>21 the operator's legs. And my opinion was that warning 14:22:19</p> <p>22 really should be placed on the rear seat where the 14:22:22</p> <p>23 person who's likely to slide off would see it as 14:22:26</p> <p>24 opposed to hoping that person can see around the 14:22:30</p> <p>25 operator, perhaps a second passenger, to the warning 14:22:33</p> <p style="text-align: right;">Page 175</p>	<p>1 A. So it was a source of frustration, and 14:23:44</p> <p>2 I'm sure for the client too. And ultimately, I feel 14:23:47</p> <p>3 bad for the plaintiffs because the nature of the 14:23:51</p> <p>4 injury is basically equivalent to having someone stick 14:23:53</p> <p>5 a fire hose between your legs. 14:23:57</p> <p>6 Q. When you say human factors expert, is 14:23:59</p> <p>7 that someone who tests whether or not a warning will 14:24:02</p> <p>8 be effective? 14:24:04</p> <p>9 A. Well, different -- so you asked whether 14:24:06</p> <p>10 I hold myself out as a warnings expert, and I've kind 14:24:08</p> <p>11 of explained that I don't think by myself I could be 14:24:12</p> <p>12 an expert to justify, without support and testing, a 14:24:14</p> <p>13 warning. There are people in the industry, generally 14:24:17</p> <p>14 human factors people, who consider themselves warnings 14:24:19</p> <p>15 experts. 14:24:24</p> <p>16 I would still argue that even if you 14:24:24</p> <p>17 have a human factors person, you need an engineer, and 14:24:26</p> <p>18 you need somebody with expertise in technical writing; 14:24:29</p> <p>19 and the human factors expert is generally somebody 14:24:33</p> <p>20 with a stronger psychology background than, for 14:24:37</p> <p>21 example, I have. How will someone perceive this 14:24:39</p> <p>22 language? Is it likely to cause them to change their 14:24:43</p> <p>23 behavior? 14:24:46</p> <p>24 I've got formal training in hazard 14:24:47</p> <p>25 detection, failure modes and effects analysis, and 14:24:49</p> <p style="text-align: right;">Page 177</p>

<p>1 determining whether the hazard may justify a warning 14:24:53</p> <p>2 and whether that warning should be a warning, a danger 14:24:56</p> <p>3 or a caution. That's all within my area of expertise, 14:24:59</p> <p>4 but for me to go out and say if we put this warning on 14:25:03</p> <p>5 this tank, it's going to prevent this accident, all 14:25:06</p> <p>6 I'm willing to say, like I said earlier in this 14:25:10</p> <p>7 deposition, I certainly think if we put a warning on a 14:25:13</p> <p>8 tank not to use a tank with a malfunctioning 14:25:16</p> <p>9 controller, it's more likely to prevent the use of a 14:25:19</p> <p>10 malfunctioning controller, but I'm not prepared to say 14:25:24</p> <p>11 that more likely than not that person would have 14:25:26</p> <p>12 changed his behavior. That's where the human factors 14:25:30</p> <p>13 person comes in. 14:25:33</p> <p>14 Q. Okay. And to your knowledge, have any 14:25:33</p> <p>15 human factors experts considered any of the warnings 14:25:37</p> <p>16 that you propose for the Chart tank or for the Chart 14:25:42</p> <p>17 controller? 14:25:45</p> <p>18 A. No, but I'll also be clear. I really 14:25:45</p> <p>19 don't see this as primarily a warnings issue. We have 14:25:48</p> <p>20 a crack that resulted in a catastrophic failure and 14:25:50</p> <p>21 event here. A warning is -- so the way we're trained 14:25:57</p> <p>22 is design it out, guard against it, and the last 14:26:02</p> <p>23 resort is warnings and instructions to users because 14:26:04</p> <p>24 they're less effective than obviously designing out 14:26:07</p> <p>25 the hazard or putting in an effective guard. 14:26:10</p> <p style="text-align: right;">Page 178</p>	<p>1 depends upon Chart's testimony and further discovery 14:27:43</p> <p>2 as to whether or not you're offering an opinion on a 14:27:46</p> <p>3 failure to warn? 14:27:49</p> <p>4 A. Well, I'll say in retrospect given 14:27:50</p> <p>5 what's happened here, I think there should be a 14:27:53</p> <p>6 warning and instruction that you should not operate 14:27:56</p> <p>7 this tank in critical areas without the controller 14:27:58</p> <p>8 functioning properly. 14:28:03</p> <p>9 MR. SMITH: Okay. I think that's it. 14:28:07</p> <p>10 Give me two seconds or two minutes and I'll make sure 14:28:08</p> <p>11 I don't have any other questions. And then I think 14:28:11</p> <p>12 Bill will have some questions for you or may have some 14:28:14</p> <p>13 questions for you. 14:28:17</p> <p>14 THE VIDEOGRAPHER: The time is 2:27, and 14:28:18</p> <p>15 we are off the record. 14:28:20</p> <p>16 (Recess taken.) 14:28:21</p> <p>17 THE VIDEOGRAPHER: The time is 2:35, and 14:32:28</p> <p>18 we are back on the record. 14:36:05</p> <p>19 EXAMINATION 14:36:07</p> <p>20 BY MR. TARANTINO: 14:36:07</p> <p>21 Q. Good morning, Dr. Kasbekar. My name is 14:36:08</p> <p>22 Bill Tarantino. I'm going to ask you a few very short 14:36:11</p> <p>23 questions. 14:36:15</p> <p>24 A. Okay. 14:36:16</p> <p>25 Q. Do you have any education or training in 14:36:16</p> <p style="text-align: right;">Page 180</p>
<p>1 In this case, what I'm really saying is 14:26:13</p> <p>2 the tank is defective because we've got a breach of 14:26:17</p> <p>3 the interior wall and a rapid loss of vacuum and 14:26:21</p> <p>4 introduction of nitrogen into the vacuum space. 14:26:25</p> <p>5 Q. Are you making a claim that there was 14:26:27</p> <p>6 a -- strike that. Are you offering an opinion in this 14:26:33</p> <p>7 case that Chart failed to warn users regarding either 14:26:35</p> <p>8 the tank or the controller? 14:26:39</p> <p>9 A. Well, from what I -- Chart really hasn't 14:26:41</p> <p>10 been deposed yet, so I don't know really what their 14:26:47</p> <p>11 intention were. From what I gleaned from the 14:26:50</p> <p>12 documents -- and this is me trying to interpret 14:26:54</p> <p>13 Chart's documents -- is they assign low risk to the 14:26:59</p> <p>14 very event -- the crack in the weld and the loss of 14:27:04</p> <p>15 vacuum. And it appears that perhaps -- and this is me 14:27:08</p> <p>16 speculating -- that the reason they assign that low 14:27:10</p> <p>17 risk is because they think the controller may mitigate 14:27:13</p> <p>18 that. It's not said in so many words, but it's a 14:27:16</p> <p>19 possibility. 14:27:19</p> <p>20 So if Chart's position is the controller 14:27:19</p> <p>21 would have prevented this loss, then my opinion is 14:27:24</p> <p>22 that if that's the case, then there ought to be 14:27:30</p> <p>23 significant instructions and warnings not to operate 14:27:36</p> <p>24 the tank without a controller. 14:27:38</p> <p>25 Q. Okay. So is it correct to say that it 14:27:41</p> <p style="text-align: right;">Page 179</p>	<p>1 the fields of cryobiology? 14:36:18</p> <p>2 A. No. 14:36:20</p> <p>3 Q. And are you an expert in any way on the 14:36:20</p> <p>4 appropriate lab practices for in vitro fertilization? 14:36:23</p> <p>5 A. No. 14:36:27</p> <p>6 Q. Are you an expert for the practices that 14:36:27</p> <p>7 are required to ensure the viability of human embryos? 14:36:31</p> <p>8 A. No. 14:36:36</p> <p>9 Q. Same question with respect to human 14:36:36</p> <p>10 eggs. 14:36:39</p> <p>11 A. No. 14:36:39</p> <p>12 Q. Do you have any knowledge or foundation 14:36:40</p> <p>13 as to which particular temperature may impair the 14:36:47</p> <p>14 viability of cryopreserved eggs or embryos? 14:36:51</p> <p>15 A. Only to the extent of what I have read 14:36:57</p> <p>16 in Christin Allen's report. 14:36:59</p> <p>17 Q. Beyond Christin Allen's report, did you 14:37:02</p> <p>18 read anything else? 14:37:05</p> <p>19 A. No, and if I did, it was casual reading. 14:37:07</p> <p>20 I have no intention of offering opinions in those 14:37:10</p> <p>21 areas. 14:37:13</p> <p>22 Q. Are you familiar with cryogenic tanks 14:37:13</p> <p>23 that use vapor to maintain their temperature? 14:37:18</p> <p>24 A. I'm familiar with the existence of such 14:37:23</p> <p>25 tanks. 14:37:25</p> <p style="text-align: right;">Page 181</p>

1 Q. What do you know about them? 14:37:25	1 the record. 14:39:57
2 A. That they're tanks that provide liquid 14:37:28	2 WHEREUPON, the foregoing deposition was
3 and vapor storage and perhaps some that only provide 14:37:30	3 concluded at the hour of 2:39 p.m. Total time on the
4 vapor, but that's the extent of it. 14:37:34	4 record was 4 hours and 10 minutes.
5 Q. Can you explain what you understand 14:37:36	5 * * * * *
6 vapor storage to mean? 14:37:38	6
7 A. Storage where the samples are not 14:37:39	7
8 submerged in liquid nitrogen, but instead are stored 14:37:45	8
9 in a vapor space directly above the liquid nitrogen. 14:37:47	9
10 Q. So there are mechanisms to maintain very 14:37:52	10
11 low temperatures without being submerged in liquid 14:37:58	11
12 nitrogen? 14:38:02	12
13 A. I -- yes. I mean, I understand that 14:38:02	13
14 that's possible to do. I know little to nothing about 14:38:06	14
15 its use and functions -- 14:38:11	15
16 Q. Do you -- 14:38:15	16
17 A. -- with regard to biological materials. 14:38:16	17
18 Q. Okay. In the course of your 14:38:17	18
19 investigation, have you uncovered any information 14:38:19	19
20 other than the absence of the controller to suggest 14:38:26	20
21 that the physicians or staff at PFC misused this tank? 14:38:31	21
22 A. No, and I have looked at the tank itself 14:38:39	22
23 for any evidence of misuse or abuse and have not seen 14:38:42	23
24 that. 14:38:47	24
25 MR. TARANTINO: Okay. I have nothing 14:38:51	25
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1 further. Thanks. 14:38:52	1 I, ANAND DAVID KASBEKAR, PH.D., the
2 MS. ZEMAN: I think I have just a few 14:38:54	2 deponent in the above deposition, do hereby
3 questions. 14:38:55	3 acknowledge that I have read the foregoing transcript
4 EXAMINATION 14:38:56	4 of my testimony, and state under oath that it,
5 BY MS. ZEMAN: 14:38:56	5 together with any attached Amendment to Deposition
6 Q. Dr. Kasbekar, Chart's counsel had asked 14:38:57	6 pages, constitutes my sworn testimony.
7 you some questions regarding the log data pulled off 14:39:02	7
8 of the subject controller, correct? 14:39:05	8 _____ I have made changes to my deposition
9 A. Yes. 14:39:08	9 _____ I have NOT made any changes to my deposition
10 Q. For the dates that he had referenced 14:39:08	10
11 where the log indicated a zero level, do you know what 14:39:11	11
12 tank the controller was attached to on those dates? 14:39:15	12
13 MR. SMITH: Leading. 14:39:18	13 ANAND DAVID KASBEKAR, PH.D.
14 A. I do not. 14:39:19	14
15 Q. (BY MS. ZEMAN) Assuming it was attached 14:39:20	14 Subscribed and sworn to before me this
16 to a tank, do you know whether the tank contained any 14:39:24	15 ____ day of _____, 20____.
17 samples on those dates? 14:39:27	16
18 A. I do not. 14:39:28	17 My Commission expires: _____
19 MS. ZEMAN: Thank you. That's all I 14:39:30	18
20 have. 14:39:32	19
21 THE VIDEOGRAPHER: This concludes the 14:39:34	20
22 deposition of Anand David Kasbekar, Ph.D. 14:39:35	20 Notary Public
23 THE DEPONENT: Perfect. 14:39:44	21
24 THE VIDEOGRAPHER: Total number of media 14:39:46	22
25 units used is one. The time is 2:39, and we are off 14:39:48	23
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	25
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<p>1           REPORTER'S CERTIFICATE</p> <p>2</p> <p>3           I, Sandra L. Bray, Registered Diplomat</p> <p>4 Reporter, Certified Realtime Reporter, and Notary</p> <p>5 Public within and for the State of Colorado,</p> <p>6 commissioned to administer oaths, do hereby certify</p> <p>7 that previous to the commencement of the examination,</p> <p>8 the witness was duly sworn by me to testify the truth</p> <p>9 in relation to matters in controversy between the said</p> <p>10 parties; that the said deposition was taken in</p> <p>11 stenotype by me at the time and place aforesaid and</p> <p>12 was thereafter reduced to typewritten form by me; and</p> <p>13 that the foregoing is a true and correct transcript of</p> <p>14 my stenotype notes thereof.</p> <p>15           That I am not an attorney nor counsel</p> <p>16 nor in any way connected with any attorney or counsel</p> <p>17 for any of the parties to said action nor otherwise</p> <p>18 interested in the outcome of this action.</p> <p>19           DATED: December 27, 2019</p> <p>20</p> <p>21</p> <p>22           <u>Sandra L. Bray</u></p> <p>              Sandra L. Bray</p> <p>23           Registered Diplomat Reporter</p> <p>              Certified Realtime Reporter</p> <p>24           and Notary Public</p> <p>25           My commission expires: January 16, 2020.</p> <p style="text-align: right;">Page 186</p>	

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**[contraction - cryogenically]**

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**[cryogenics - deposition]**

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**[deposition - disk]**

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[display - embryos]

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**[mve - objection]**

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[think - type]

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[type - vacuum]

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

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